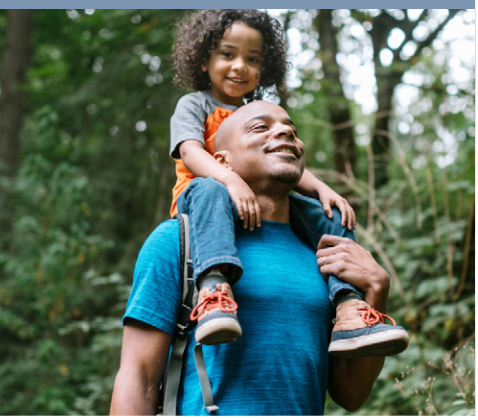

2020–2021 FOREST ACTION PLAN ANNUAL REPORT

Taking actions to restore and conserve Washington's forests so our environment and communities thrive.

NATURAL RESOURCES

HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS

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PHOTO CREDITS

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2020–2021 FOREST ACTION PLAN ANNUAL REPORT

Taking actions to restore and conserve Washington's forests so our environment and communities thrive.

WASHINGTON STATE DEPT OF
NATURAL RESOURCES
HILARY S. FRANZ
COMMISSIONER OF PUBLIC LANDS

Introduction

The 2020 Washington State Forest Action Plan was approved by the U.S. Forest Service (USFS) and formally adopted by the Washington State Department of Natural Resources (DNR) on Oct. 26, 2020. Washington's Forest Action Plan is a comprehensive review of forests across all lands — public, private, rural, and urban — and offers proactive solutions to conserve, protect, and enhance the trees and forests that people and wildlife depend on.

To meet the scale of challenges and opportunities facing Washington's forests, the plan established 23 goals and 159 priority actions to guide implementation through June 30, 2025. The plan also commits to monitoring progress made towards those goals in partnership with the USFS, Washington Department of Fish and Wildlife (WDFW), and other Shared Stewardship partners, while also communicating the story of our collective implementation effort and lessons learned over time. This annual report highlights implementation during the first year following plan adoption, provides an overview of agency and partner priorities related to ongoing actions, and features updates that will inform and drive our collaborative efforts to achieve our goals moving forward.

The first year of implementation was influenced by significant events of local and global importance. The 2020 Forest Action Plan was finalized and published during the first year of Washington's response to the COVID-19 pandemic. The historic 2020 Labor Day wildfires that besieged the Pacific Northwest impacted our forests and communities. Record-breaking weather patterns extending into 2021 resulted in Washington declaring both wildfire and drought emergencies.

Implementation of the action plan was and continues to be influenced and challenged by these events. Despite the circumstances, tremendous progress has been made to help Washington's forests thrive. Incredible stories of individual and community resilience, innovation and scientific inquiry, and collaboration among sometimes unlikely partners are highlighted throughout this report. The successes and opportunities detailed in this annual update also highlight the commitment of our elected officials, community leaders, Tribal leaders, and numerous agencies, nonprofits, and industry partners who remain deeply invested in addressing the threats facing forest ecosystems.

Historic Legislation Bolstering Wildfire Response, Forest Resilience and Community Resiliency

Second Substitute House Bill 1168 officially became state law on July 25, 2021. This historic legislation provides a significant increase in available resources to address wildfire risk and the forest health crisis facing Washington State. The legislation states that "it is the intent of the legislature to take immediate action to increase the pace and scale of forest management across different land ownerships and fully fund the 20-Year Forest Health Strategic Plan and activities developed to facilitate implementation of the Washington State Forest Action Plan."

To fulfill this legislation, the legislature provided increased funding to Washington State Parks, WDFW, and the Washington Resource and Conservation Office, as well as $125,000,000 to DNR for the 2021-2023 biennium.

A key component of House Bill 1168 is establishment of a Wildfire Response, Forest Restoration, and Community Resilience Account in the state treasury, where monies can be spent after appropriation for the sole purpose of fulfilling this legislation. The bill states that appropriations for forest health activities funded by this new account shall not be less than 25% of the funding appropriated each biennium. Importantly, funding in the account may not be used for emergency fire costs or suppression costs. DNR is required to report on the implementation of the legislature's direction on Dec. 1 of each even-numbered year.

House Bill 1168 builds on previous legislative direction (see SB 5546, HB 1711, HB 1784), which established DNR's Forest Health Assessment Framework and set the goals that drive Wasington's 20-Year Forest Health Strategic Plan, 10-Year Wildland Fire Protection Strategic Plan, and 2020 Washington State Forest Action Plan.

"Implementation of Washington's State Forest Action Plan requires collaboration with numerous agencies and partners. Under the umbrella of Shared Stewardship, our partnership with the U.S. Forest Service and the Washington Department of Fish and Wildlife is resulting in significant progress made to address wildfire risk and improving forest and community resilience. Working together on implementation enables our agencies and partners to leverage significant resources at a scale commensurate with the threats facing our forests today."

GEORGE GEISSLER
Washington State Forester

"A colleague of mine is often saying: 'Forest management is not a technical problem, it's a social one.' That can unpack in a variety of ways. To me, it speaks directly to what Shared Stewardship promises. The challenges we face and the solutions we derive are simply well beyond what's possible for one entity – federal or state agency, private landowner or interest group – can achieve own its own. We've practiced this when implementing individual projects. Given finite resources, we must extend this to prioritizing where to work at a landscape scale and making collective investments with an intentional, sequenced approach."

CHAD DAVIS
Director of State and Private Forestry, Region 6 & Region 10, USDA Forest Service

ADRIAN N ON UNSPLASH

Forest Action Plan Strategies

The 2020 Washington State Forest Action Plan identified eight themes within which goals and priority actions were nested:

- **Landscape Resilience,**
- **Community Wildfire Preparedness and Wildfire Suppression,**
- **Keeping Forests as Forests,**
- **Urban and Community Forest Resilience,**
- **Rural Economic Development,**
- **Stewardship of Family and Working Forests,**
- **Wildlife and Salmon Recovery, and**
- **Water Quality and Quantity**

The body of this report includes accomplishments, highlights, and updates for each theme.

Shared Stewardship Investment Strategy in Action

Forests across Washington are facing unprecedented challenges. DNR is pursuing a Shared Stewardship Investment Strategy in partnership with USFS and WDFW. The three agencies have identified shared priorities, aligned resources, and focused strategic investments in priority landscapes across the state. The Forest Action Plan identifies 55 priority landscapes across Washington that serve as DNR's Shared Stewardship areas of focus.

U.S. DEPARTMENT OF AGRICULTURE (USDA)

The Colville National Forest is one of many forests across Washington where the Shared Stewardship Investment Strategy has been put into action by the Washington Department of Natural Resources, Washington Department of Fish and Wildlife, and U.S. Forest Service.

LANDSCAPE RESILIENCE

KNOWING THE THREATS FACING WASHINGTON'S FORESTS, IT IS CLEAR THAT FORESTLAND MANAGERS MUST ALIGN AROUND SHARED PRIORITIES AND WORK ACROSS PROPERTY LINES TO ADVANCE BOLD AND STRATEGIC SOLUTIONS.

Landscape resilience is defined in the Forest Action Plan as the ability of a landscape to sustain desired ecological functions, robust native biodiversity, and critical landscape processes over time and under changing conditions. Increasing resilience requires partnerships across ownership and jurisdictional boundaries — no one land manager can achieve landscape and watershed resilience alone.

In recognition of the importance of partnerships, House Bill 1168 requires DNR to bolster its work with small forest landowners by establishing a Small Forest Landowner Service Forestry Program and new mapping tools to identify opportunities for small forest landowners to contribute to the goals of landscape-scale forest restoration and wildfire risk reduction. The legislature also placed a strong emphasis on environmental justice, equity, and tribal engagement, specifically through expanded use of authority under the Tribal Forest Protection Act, and requiring all investments through the Wildfire Response, Forest Restoration, and Community Resilience Account to evaluate how a proposed project benefits highly impacted and underserved communities. DNR will continue to work with the Forest Health Advisory Committee to design, implement, and monitor Washington's 2020 Forest Action Plan pursuant to this guidance from the legislature.

Contributing to Landscape Resiliency Statewide on Federal Lands Through Use of Good Neighbor Authority

In state fiscal year 2021, DNR's Federal Lands Program utilized the Good Neighbor Authority in coordination with national forests to deliver our shared goals to increase forest health and resilience across the state. Specifically, DNR completed:

- **410 acres of forest restoration treatments** on the Olympic National Forests, producing an estimated 7,032 MBF of commercial timber while supporting jobs and economic activity in rural communities.
- **1,225 acres of non-commercial forest health treatments on the Okanogan-Wenatchee National Forest**
- **1,354 acres of forest health treatments on the Colville National Forest** producing 10,994 MBF of commercial timber volume, one aquatic improvement project, 18 miles of deferred maintenance on national forest system roads, and 2 miles of road decommissioning.
- **401 acres of forest health treatments on the Gifford Pinchot National Forest** producing 4780 MBF of commercial timber volume, one aquatic improvement project, 15 miles of deferred maintenance on national forest system roads, and one mile of road decommissioning.

> **CLIMATE RESILIENCE REQUIRES US TO PREPARE, ACT, RESPOND, AND RECOVER WITH CURRENT AND FUTURE CLIMATE CONDITIONS IN MIND.**
>
> **DNR PLAN FOR CLIMATE RESILIENCE 2020**

BY THE NUMBERS

1,354 acres

OF FOREST HEALTH TREATMENTS ON THE COLVILLE NATIONAL FOREST PRODUCING 10,994 MBF OF COMMERCIAL TIMBER VOLUME

1,225 acres

OF NON-COMMERCIAL FOREST HEALTH TREATMENTS ON THE OKANOGAN-WENATCHEE NATIONAL FOREST

410 acres

OF FOREST RESTORATION TREATMENTS ON THE OLYMPIC NATIONAL FORESTS

401 acres

OF FOREST HEALTH TREATMENTS ON THE GIFFORD PINCHOT NATIONAL FOREST

The Washington Department of Natural Resources Federal Lands Program completed 1,225 acres of non-commercial forest health treatments on the Okanogan-Wenatchee National Forest during the 2021 fiscal year. Treatment on more than 4,000 additional acres is expected to begin in the spring of 2022.

ZOEY CHUE AND THE ISLANDS CONSERVATION CORPS

SUCCESS STORY

SAN JUAN ARCHIPELAGO GARRY OAK ECOSYSTEM RESTORATION

THIS AREA WAS PRIORITIZED IN THE 2020 FOREST ACTION PLAN DUE TO ITS RELATIVELY HIGH RISK OF EXPERIENCING DROUGHT, WILDFIRE, AND THE EFFECTS OF CLIMATE CHANGE.

The Islands Priority Landscape includes the entirety of the San Juan Islands Archipelago. This area was prioritized in the 2020 Forest Action Plan due to its relatively high risk of experiencing drought, wildfire, and the effects of climate change. In 2020, DNR and partners in this priority landscape were awarded a Landscape Scale Restoration grant. The grant focuses on restoration of Garry Oak ecosystems, a priority-one plant community according to the Washington Natural Heritage Plan. Only 3 percent of pre-settlement Garry Oak ecosystems remain alive today in Washington. Garry Oak systems are culturally significant to Native Americans and provide habitat for several endangered and threatened species. Project partners are conducting restoration treatments to reduce hazardous fuels, treat invasive species, and restore native plant diversity. Small-diameter logs and other woody biomass removed from restoration sites are being converted into biochar, which sequesters carbon and can be utilized by local agricultural producers as a soil amendment. Restoration treatments are creating opportunities to utilize traditional ecological knowledge and indigenous management techniques, as well as reducing risk of drought-related mortality and uncharacteristic wildfire. DNR committed funding from House Bill 1168 to the San Juan Conservation District that will leverage these grant resources to increase the impact and footprint of associated forest health work.

The project is a partnership between DNR, San Juan Island Conservation District, Island Conservation Corps, Samish Indian Nation, Rainshadow Consulting, San Juan County Land Bank, San Juan Preservation Trust, Washington State Parks and Recreation Commission, and Western Washington University.

Western Washington Landscape Resilience

Since adopting the 2020 Forest Action Plan, DNR has worked internally and with partners to build the framework for an all-lands approach to forest health and resiliency in western Washington. This effort considered scientific, social, cultural and economic factors while building on existing plans and strategies.

The action plan established 16 western priority landscapes for landscape resilience across 2 million acres in western Washington. These priority landscapes have helped focused implementation of the Shared Stewardship Investment Strategy, as well as additional work to bolster forest health and resiliency. The plan identifies clear threats to western Washington forests, but also opportunities to utilize science-based active management, focused invesetments and coordinated planning and implementation to improve conditions.

Highlights of DNR programs and priority actions undertaken in 2020 and 2021 in addition to the agency's utilization of Good Neighbor Authority in western Washington include:

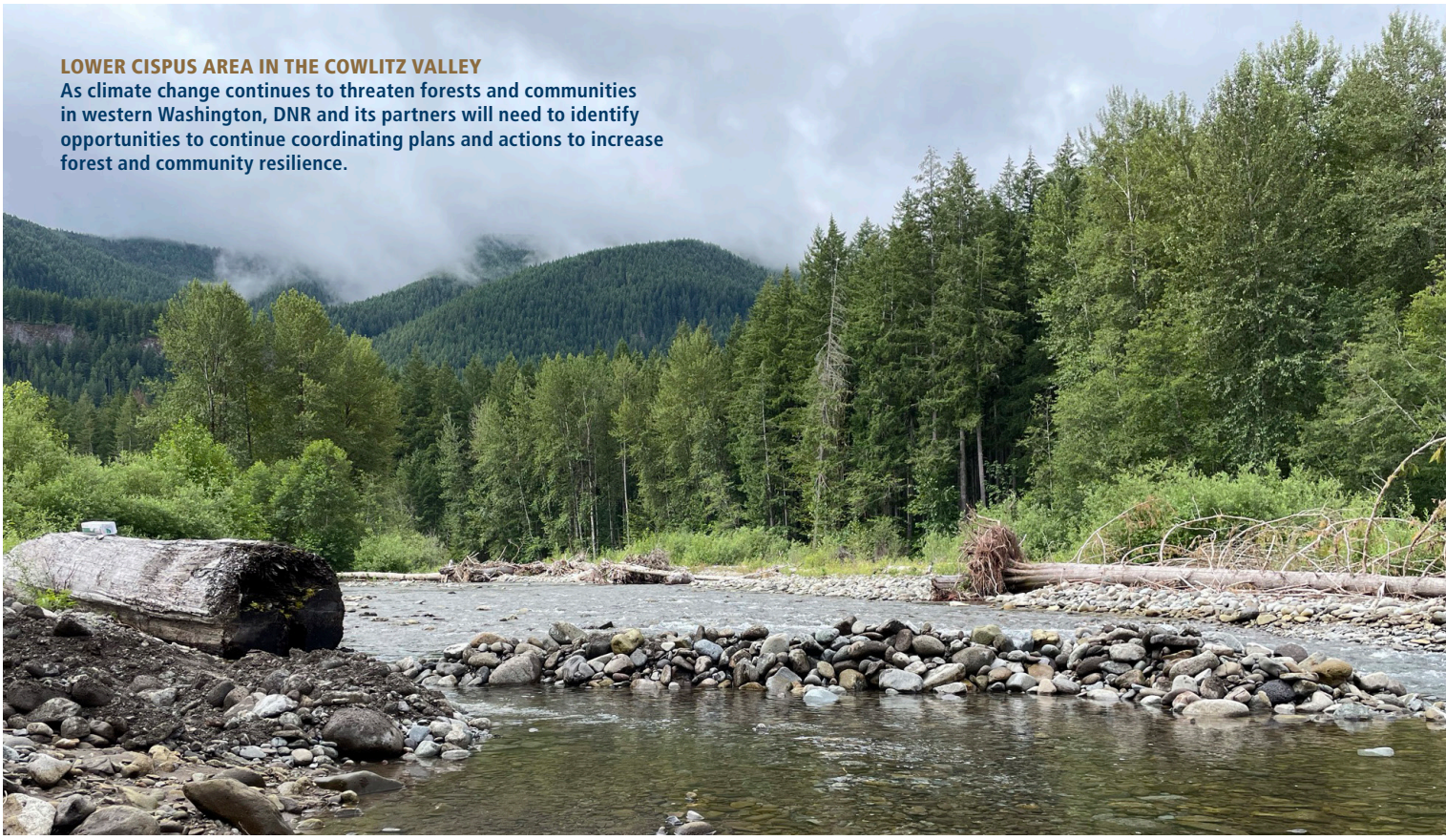
- **In September 2021, the competitive Building Forest Partnerships grant program awarded funding to forest collaboratives** working in western Washington to support accelerated forest health planning and treatments in their communities, including on national forests. Funding was awarded over two state fiscal years to the Darrington Collaborative, Olympic Forest Collaborative, Pinchot Partners, and South Gifford Pinchot Collaborative.
- **DNR Forest Hazard Reduction capital dollars appropriated for the 2019-2021 biennium** funded work on 21 sites within two priority landscapes to control noxious and invasive weeds in DNR-managed natural areas and adjacent lands. DNR contracted with the Mountains to Sound Greenway Trust and Hood Canal Salmon Enhancement Group to complete the project. The same funding source was also used to purchase and deliver 3,595 tons of rock to surface seven miles of road across three priority landscapes touching the Mount Baker-Snoqualmie National Forest. The work facilitated safe access for planned restoration activities and recreation, and improved water quality in the Nooksack, Upper White, and Stillaguamish watersheds.

DNR and its partners identified opportunities to enhance forest resiliency in all 16 priority landscapes designated in the 2020 Forest Action Plan. There are more examples that deserve recognition than we have space to highlight in this report, but progress in specific priority landscapes this year included:

- **Partners worked together in the Chehalis Priority Landscape** to develop the Chehalis Basin Strategy, a multi-agency, decade-long collaborative effort to protect salmon and other aquatic species, while also fortifying communities and landscapes from the predicted increase of major flooding events.
- **WDFW is the lead partner for a Regional Conservation Partnership Program (RCPP) project** called the Southwest Washington Small Forest Lands Conservation Partnership. This project brings together the USDA Natural Resources Conservation Service (NRCS), WDFW, DNR, Washington State Conservation Commission, Washington State University Extension Forestry, and eight conservation districts to provide technical and financial assistance to small forest landowners. They receive help developing and implementing forest stewardship plans to improve fish and wildlife habitat, protect water quality, and improve forest health. The project also helps small forest landowners meet regulatory requirements in a voluntary and incentive-based manner, which reduces pressure to convert these forests to other uses.
- **Local partners came together in the Islands Priority Landscape to form the San Juan Islands Forest Health Collaborative** with a mission of "[promoting] stewardship of county natural resources through education, implementing natural resource conservation practices, and fostering a stewardship ethic in partnership with landowners, residents, in collaboration with agencies and other organizations."
- **In the Snoquera and Stillaguamish Priority Landscapes, local partners worked with Blue Forest Conservation** to explore how conservation finance tools, including the Forest Resilience Bond, may assist implementation of landscape-scale restoration.

DNR acknowledges the leadership and engagement of our state and federal agency partners, tribes, local governments, non-governmental organizations, and countless individuals committed to restoring and conserving Washington's forests. Through these partnerships, DNR will continue to advance landscape resilience in western Washington.

USDA FOREST SERVICE PHOTO BY ELIZABETH ROBINSON



LOWER CISPUS AREA IN THE COWLITZ VALLEY
As climate change continues to threaten forests and communities in western Washington, DNR and its partners will need to identify opportunities to continue coordinating plans and actions to increase forest and community resilience.

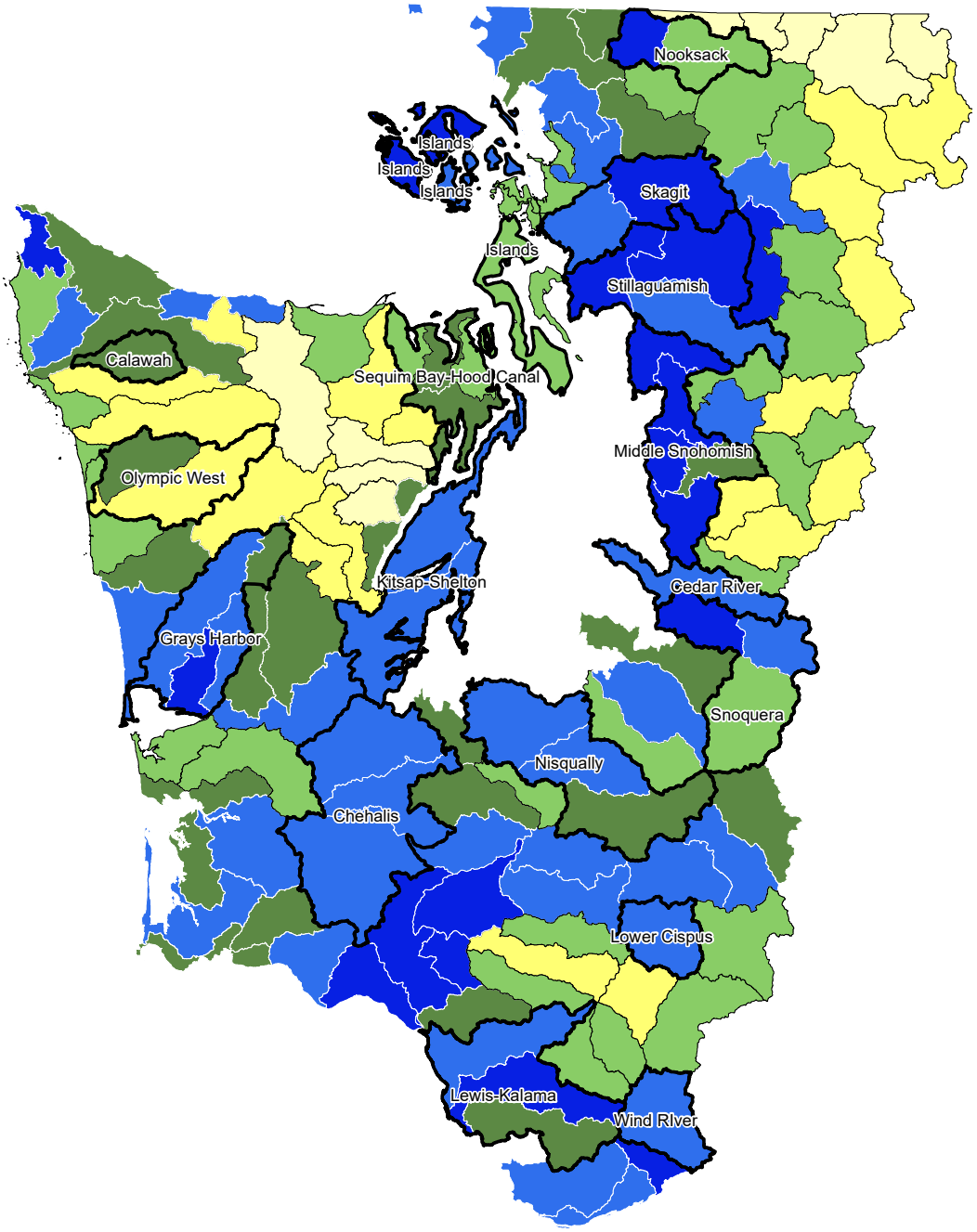
2021 Western Washington Priority Landscapes Updates

While it is DNR's intent that priority landscapes are established or updated during the Forest Action Plan revision process, which happens in five-year intervals, we were able to identify minor amendments during the first year of implementation. We worked with partners to identify revisions to the map of priority landscapes in western Washington that will allow us to better meet our goals and enact our strategies.

The Lower Cispus area in the Cowlitz Valley is now a priority landscape. The boundary of the Grays Harbor Priority Landscape on the Olympic Peninsula will be updated in 2022.

The Lower Cispus Priority Landscape ranked high in DNR's data-driven prioritization process for western Washington landscapes that informed the 2020 Forest Action Plan. Collaboration with the Gifford Pinchot National Forest to achieve shared goals and objectives has revealed emergent opportunities. The Lower Cispus watershed has served as a focus of forest restoration and salmon recovery for the Gifford Pinchot National Forest, Cowlitz Valley Indian Tribe, Pinchot Partners, DNR and numerous other agency and non-governmental partners. Designating the Lower Cispus as a priority landscape in Washington's Forest Action Plan will enable additional collaborative efforts, as well as access to tools and resources for accelerated implementation of critical watershed restoration activities.

DNR is adjusting the boundary of the Grays Harbor Priority Landscape in coordination with the Olympic National Forest and Olympic Forest Collaborative to include the upper Wynoochee watershed. This will provide better function across all-land ownerships in the priority landscape. Adding this area to the priority landscape will include acreage that is a significant focus for local partners and create opportunities for addressing several risks to forest health identified by the Forest Action Plan analyses. A multi-year environmental review process recently resulted in a decision by USFS to conduct approximately 5,000 acres of forest restoration treatments and 100 miles of road work over the next five years in the priority landscape. The area will also benefit from aquatic restoration activities, road decommissioning, and improvements to recreation as a result of the USFS decision.



WESTERN WASHINGTON FOREST HEALTH PRIORITY HUC 6 WATERSHEDS

DECEMBER 2021

Western Washington Priority Landscapes include an additional priority area in the Cowlitz Valley and an updated Grays Harbor Priority Landscape boundary.

- Low
- Low-Moderate
- Moderate
- Moderate
- Moderate High
- High
- Priority Landscapes
- Urban HUCs

N

0 20 40 miles

Eastern Washington Landscape Resilience

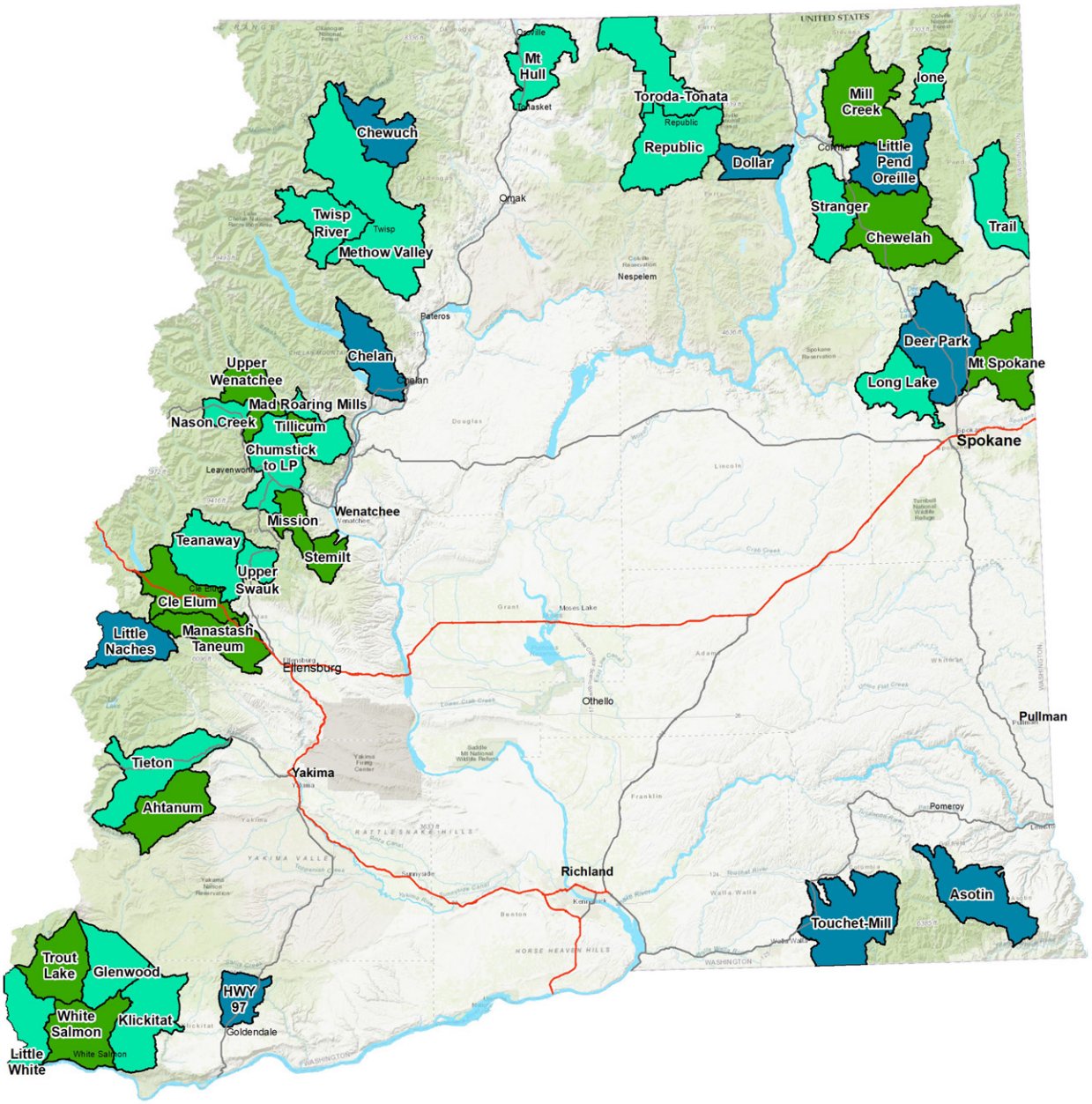
The 2020 Forest Action Plan incorporates the goals and priority actions for landscape resilience in central and eastern Washington as defined in the comprehensive 20-Year Forest Health Strategic Plan: Eastern Washington. DNR submitted a report to the Washington legislature in December of last year detailing the progress made on implementing the 20-Year Forest Health Strategic Plan, including forest health assessments of 30 priority landscapes totaling approximately 3.37 million acres. The report includes a commitment by DNR to analyze nine additional priority landscapes covering 1.06 million acres by December 2022. It also contains important new assessment components that spatially prioritize forest health treatments needs, assess and inform forest treatment type based on operational and economic feasibility, identify forests where managing for closed canopy forest structure will be most sustainable over time, and prioritization of forest health treatments for the dual benefit of forest health and wildfire response.

As of October 31, 2021, DNR and shared stewardship partners have reported 363,143 acres of forest health treatments across eastern Washington on tribal, state, federal, local, and private lands. This includes 153,078 acres of forest health treatments in our 39 priority landscapes impacting 96,893 footprint acres. With these treatments, partners are making meaningful progress towards our goal to treat 1.25 million acres by 2037 in eastern Washington's priority landscapes.

Eastern Washington 2020 – 2021 DNR program highlights in addition to the agency's utilization of Good Neighbor Authority include:

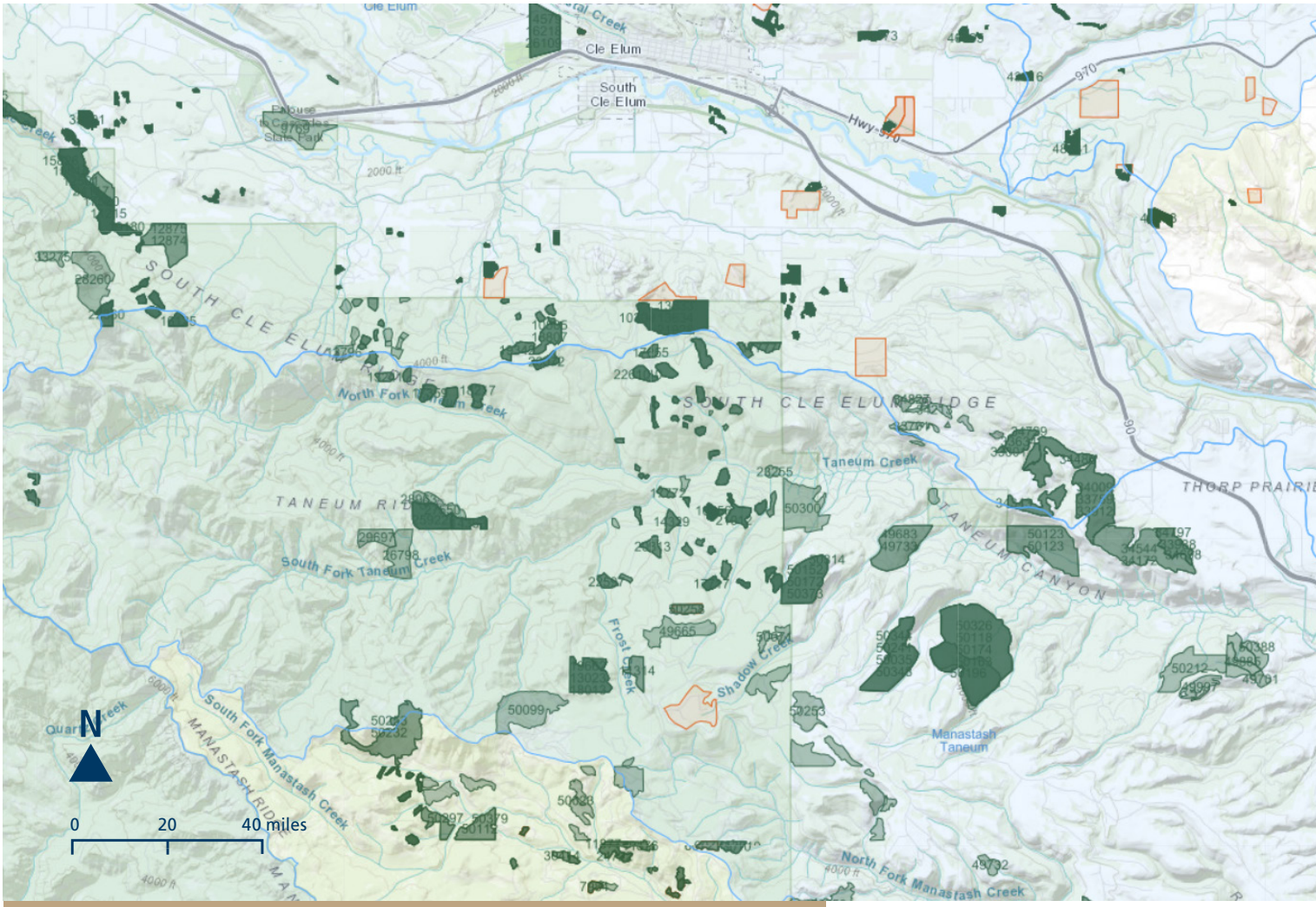
- **In September 2021, the Building Forest Partnerships competitive grant program awarded** more than $400,000 to forest collaboratives working in eastern Washington to accelerate the pace and scale of wildfire risk reduction and forest resilience treatments. Funding for the 2021-2023 biennium was awarded to the Chumstick Wildfire Stewardship Coalition, North Central Washington Forest Health Collaborative, Northeast Washington Forest Collaborative, South Gifford Pinchot Collaborative, Stemilt Partnership, and Tapash Sustainable Forest Collaborative.
- **$2.8 million in direct investments and All-Lands Restoration competitive grants** with 2019-2021 DNR Forest Hazard Reduction Capital dollars for projects that resulted in forest health treatment planning on more than 200,000 acres and forest health treatments on over 2,500 acres.

- **Financial and staff support towards the successful execution of Washington's Prescribed Fire Training and Exchanges (TREX)** in the fall of 2020 and spring of 2021. These engaged over 50 participants who assisted with prescribed burns on 268 acres in northeast and central Washington on National Park Service, Bureau of Land Management, Kalispel Tribe, municipal, and private lands.
- **Completion and updating of landscape evaluations** with datasets, maps, and summaries available to inform planning and monitoring for more than 30 priority landscapes.
- **Adoption of the 20-Year Forest Health Strategic Plan Monitoring Framework** to address two overarching questions: How are forest conditions and associated forest health indicators changing over time? And, what are the outcomes of forest health treatments?
- **Release of the Forest Health Tracker,** an interactive online platform that aims to gather and display forest health project information across all lands in Washington. The initial emphasis for developing the Forest Health Tracker was placed on forest health treatments in eastern Washington.



EASTERN WASHINGTON PLANNING AREAS FOR 20-YEAR FOREST HEALTH STRATEGIC PLAN / SB 5546

Landscapes identified by DNR and partners through the development of the 20-Year Forest Health Strategic Plan. It is anticipated that additional planning areas will be identified during the life of this Forest Action Plan.



FOREST HEALTH TRACKER TREATMENT DATA

Knowing the location and details of forest health projects in Washington increases transparency and our situational awareness of forest health activities across land ownerships. Forest Health Tracker is facilitating greater strategic planning and monitoring of progress through shared stewardship of Washington's forests.

The Forest Health Tracker is available to the public. Keep track of projects in your area at: foresthealthtracker.dnr.wa.gov

FOREST HEALTH TRACKER DISPLAY OF TREATMENT AREAS IN THE MANASTASH-TANEUM PRIORITY LANDSCAPE

- Additional Project Boundaries
- All Project Treatment Areas
- 20-Year Forest Health Strategic Plan for Eastern Washington

There are numerous stories of increasing resilience through shared stewardship in eastern Washington priority landscapes over the past year. A few highlights include:

Trout Lake Priority Landscape

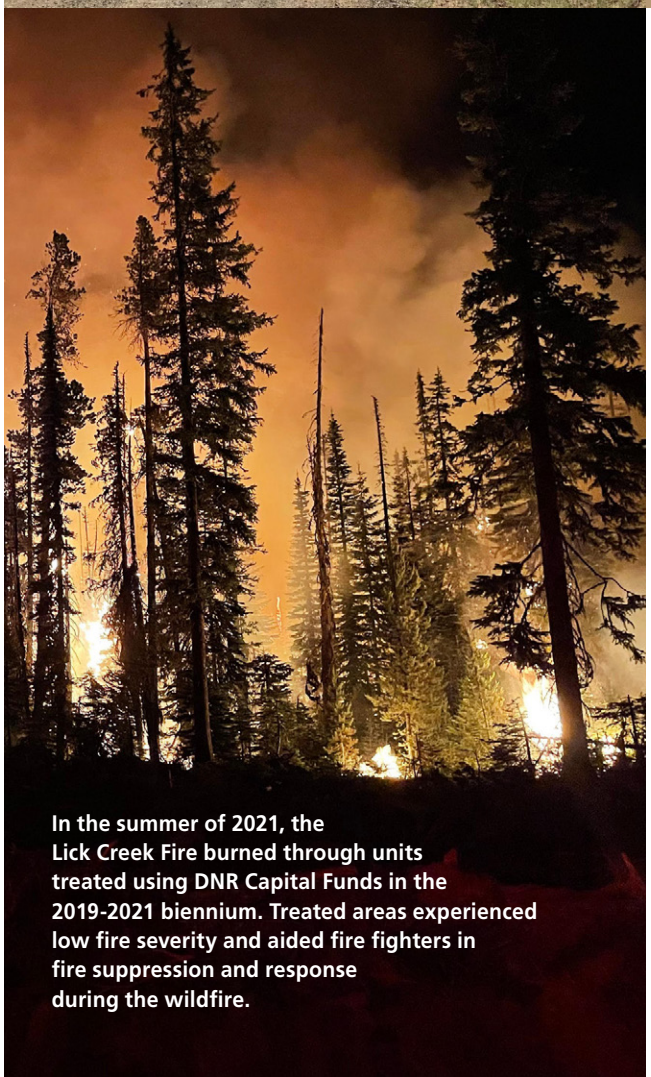
Gifford Pinchot National Forest, in partnership with the South Gifford Pinchot Forest Collaborative and Mount Adams Resource Stewards, is implementing the Upper White Salmon River Forest Restoration and Resilience Project. The project addresses impacts of past harvest and fire suppression resulting in the removal of large, fire tolerant trees, as well as significant in-growth of grand fir and other species, making the area susceptible to insect outbreaks, disease, and uncharacteristic wildfire. DNR invested $420,000 in implementation of the project and other planning activities for both the Upper White Salmon River Forest Restoration Project and the adjacent Little White Priority Landscape. DNR funds accelerated implementation of 537 acres of fuel reduction and prescribed fire line preparation, as well as implementation of a prescribed burn in the fall of 2021. In total, the project is anticipated to produce more than 50 million board feet of timber as a byproduct of the restoration activities.

Tillicum Priority Landscape

The DNR Federal Lands Program awarded a $3.3 million bid for priority non-commercial thinning of 4,012 acres within the Tillicum Hazardous Fuels Reduction Project on the Okanogan-Wenatchee National Forest, near the City of Entiat. The project is the largest Good Neighbor Authority project undertaken in Washington and represents a significant milestone in the implementation the 20-Year Forest Health Strategic Plan: Eastern Washington in the Tillicum Priority Landscape.

Wildfire and Forest Resilience on the Umatilla National Forest

On July 7, 2021, lighting strikes ignited multiple fires on the Umatilla National Forest in southeast Washington. Two fires, both burning roughly 15 miles from Pomeroy, WA – Dry Gulch Fire and Lick Creek Fire – became a single incident on July 8 after the two fires became one. The conflagration, called Lick Creek Fire, burned for nearly two months before being fully contained on August 26, 2021. In total the fire burned 80,421 acres of timber, shrubs, and grasses (Inciweb 2021). DNR invested $300,000 in 2020 to implement high-priority treatments on the Umatilla National Forest. The treatment area, known as Blues East, burned in the Lick Creek Fire. Before and after photos of the site make clear that the implementation of fuel reduction activities prior to the wildfire aided in wildfire suppression and resulted in reduced tree mortality. The treatments occurred near private recreational cabins and public recreation infrastructure, helping to protect millions of dollars in private and public resources.



In the summer of 2021, the Lick Creek Fire burned through units treated using DNR Capital Funds in the 2019-2021 biennium. Treated areas experienced low fire severity and aided fire fighters in fire suppression and response during the wildfire.

Resilience at the Regional Scale

Threats facing Washington forests, including drought and wildfire, require us to look beyond our state's border and to coordinate with regional partners. Existing regional agreements recognize this need and provide a venue for DNR to contribute to and benefit from coordination with partners across jurisdictional and political boundaries.

Highlights of regional efforts DNR participated in over the last year include:

- **The Cascades to Coast Landscape Collaborative released two new tools** to achieve their vision for a connected network of functioning, resilient ecosystems and working lands in the coastal Pacific Northwest. The tools support activities that can help forest landowners adapt to climate change and other large-scale stressors using collaborative, science-based strategies. In 2021, The collaborative released the Coastal Northwest Landscape Conservation Mapper, an online platform intended as a decision support tool that identifies opportunities for collaboration to sustain important environmental, economic and social values in western Washington and Oregon. Later in the year, the collaborative released the Landowner Conservation Program Explorer. This tool helps private agricultural and forest landowners become more aware of financial incentives, technical assistance, and recognition programs available to them, while also connecting them to the agencies and organizations that implement them. DNR has committed resources to expand the Landowner Conservation Program Explorer tool statewide in 2022.
- **Formed in 2012 by partners along the Cascade Range in Washington and British Columbia, the Cascadia Partner Forum fosters a network** of natural resource practitioners working with partner entities to increase the adaptive capacity of a landscape and the species living within it. In 2021, the forum launched the pilot phase of a process to develop a Cascadia Climate Adaptation Strategy that includes implementation of its Indigenous Engagement Strategy and co-production of TerrAdapt – a dynamic spatial tool for planning and monitoring. The process integrated topic-based working groups supported by University of Washington's Climate Impacts Group to generate adaptation strategy products informing regional efforts.

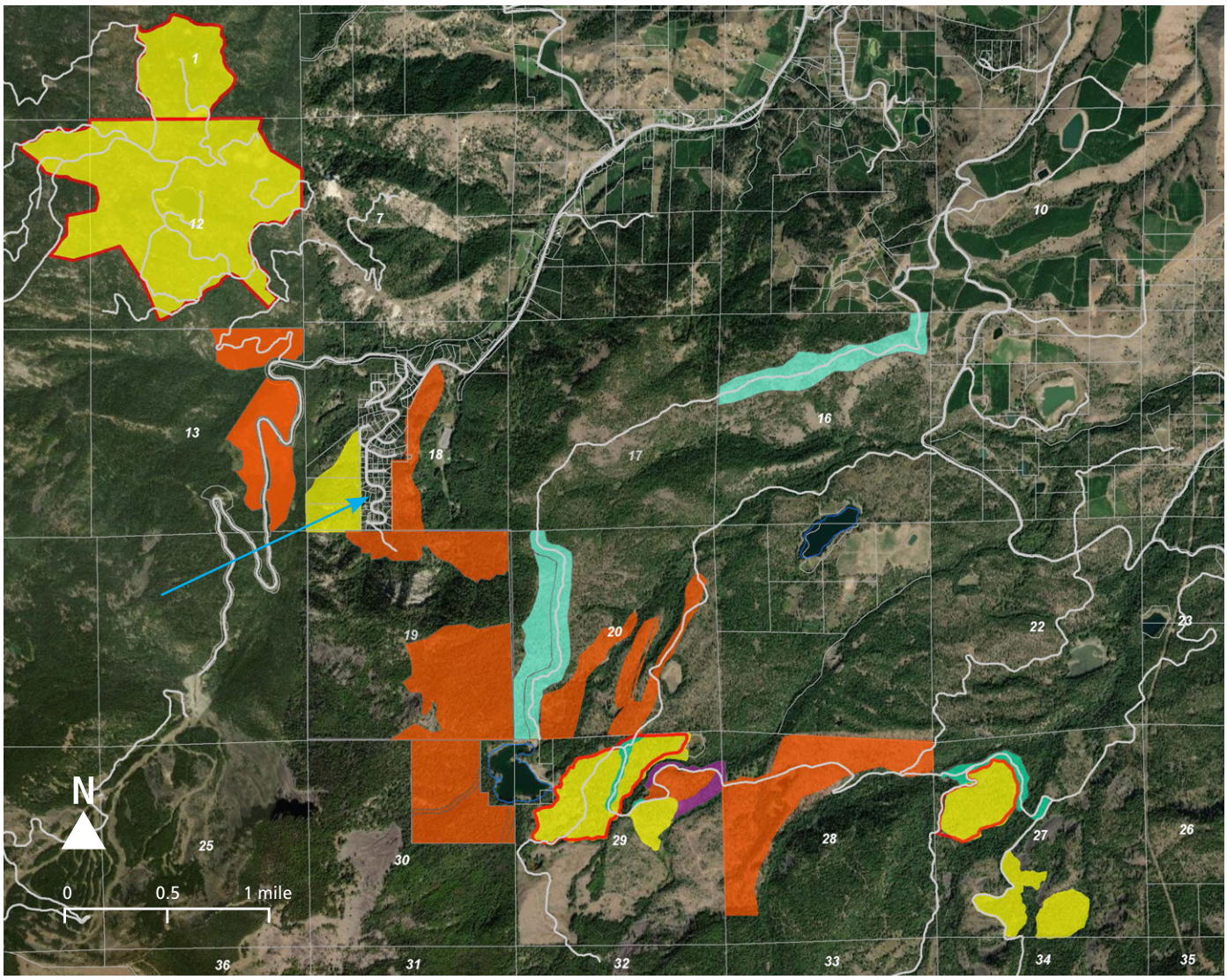
SUCCESS STORY

STEMILT PARTNERSHIP

Contributed by Erin McKay
Chelan County Natural Resources

Chelan County Natural Resource Department is particularly proud of the partnerships and momentum built during the collaborative Landscape Evaluation (LE) process for the Stemilt Planning area (see next page). The stakeholder group involved in the development of the LE was able to clearly see the benefits of implementing cross-boundary forest health work and connected across agencies and ownerships to plan units with true landscape-scale benefits. Through this process, nearly 2,500 acres have been implemented or are planned for implementation by LE stakeholder group members since the initiation of the evaluation process in 2018. And the treatments follow the swath of high-priority spaces across the central portion of the planning area, as evidenced by the side-by-side comparison of treatment priority versus implementation maps. For orientation, the blue arrow points to the residential development of Forest Ridge, located in a high priority treatment area. Chelan County is continuing to work with LE partners across ownerships to increase the footprint and effectiveness of forest health treatments in the Stemilt Planning area, and are excited about our progress towards the overall goal of treating 25-30% of the total forested acres.

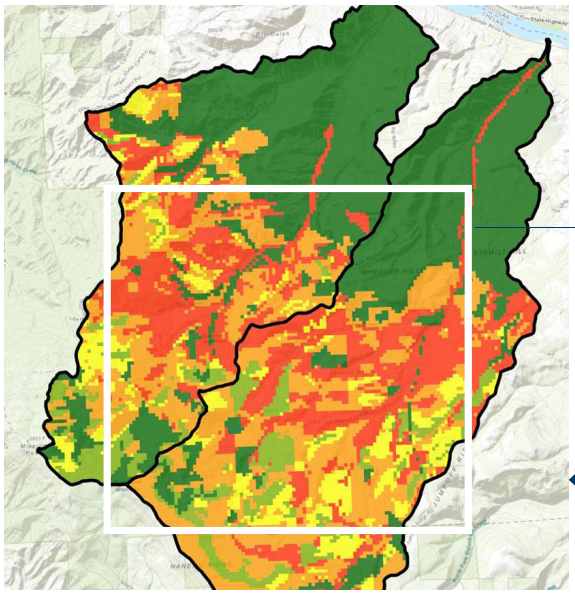
ERIN MCKAY / CHELAN COUNTY NATURAL RESOURCE DEPARTMENT



STEMILT BASIN LANDSCAPE SCALE RESTORATION AUGUST 2020

Completed/Planned

- Parcels
- Pre-Commercial Thin (PCT)
- Shaded Fuel Break
- Stand Improv-Commercial
- Stand Improv-Non-commercial
- Prescribed Burn Unit
- Roads



Treatment Priority

5	4	3	2	1
High				Low

AREA OF DETAIL

PHOTO COURTESY OF GINA FINSTAD

One of many buildings in Malden that was destroyed in 2020 by a fire storm during the historic Labor Day fire event. Fast-moving, wind-fueled wildfire claimed about 80 percent of the structures in town.

COMMUNITY WILDFIRE PREPAREDNESS AND WILDFIRE SUPPRESSION

MORE THAN 448,000 ACRES IN FORESTED AREAS BURNED DURING THE 30 LARGE FIRE EVENTS WITHIN THE 2021 FIRE SEASON, COMPARED TO FEWER THAN 33,000 ACRES IN FORESTED AREAS DURING THE 2020 FIRE SEASON.

Wildfire Seasons in Review

Department of Natural Resources is Washington's largest on-call wildland fire suppression agency. The agency is responsible for fire protection on more than 13 million acres of private and state-owned forest lands.

The 2020 and 2021 wildfire seasons each presented unique opportunities and challenges for DNR. Firefighters were given little time to adjust in 2020 as an abnormally dry April and May led to higher than average fire starts at the same time fire agencies grappled with COVID-19 protocols. Dry fuels combined with an east wind event on Labor Day created conditions that fueled a large number of simultaneous, severe wildfires that threatened many communities across Washington. Over 330,000 acres burned in one day, the largest single day total in Washington State in over a decade and more acreage than the largest single fire in state history. More than 500,000 acres burned over a 36-hour period.

The small town of Malden, approximately 30 miles south of Spokane, experienced a fast-moving firestorm during the Labor Day event that burned more than 80 percent of the structures in town. The Cold Springs Fire on the Colville Indian Reservation claimed the life of a child.

The tremendous destruction in Malden was just one of a number of fire events that day that destroyed thousands of homes across the Pacific Northwest. The Cold Springs Fire and the Whitney Fire that burned outside of Davenport destroyed nearly 50 percent of the remaining sage grouse habitat in Washington State.

There were 967 DNR fires in 2020, at least 85 percent of which were human-caused ignitions. One of the notable outcomes from that wildfire season was the proportion of forested versus non-forested acres burned in large fire events. Of the 18 large fires that occurred in Washington, 32,383 acres burned in forested areas while more than 241,421 acres burned in non-forested areas. Additional information about the impacts of fire on wildlife habitat is included in the Wildlife and Salmon Recovery section of this report.

DNR recorded a number of prominent successes during the 2020 fire season. The agency's COVID -19 mitigation planning resulted in a minimal amount of positive cases among DNR firefighters throughout the season. Additional aircraft and ground support from the National Guard aided significantly in fire response, and DNR maintained an excellent safety record. DNR crews, equipment and other resources also helped fight fires in at least eight other states, including Colorado, California, and Oregon.

2021 Wildfire Season

The 2021 fire season presented significant challenges for wildland firefighters and fire managers from beginning to end. During the peak preparedness season in April and May, there was a lull in COVID-19 prevalence in Washington. Training was completed with a minimum of disruption, with virtual learning remaining the primary mechanism for delivering wildfire training. As the season progressed, the Delta variant spread throughout Washington and caused significant impacts to initial attack and IMT operations. Isolation, quarantine and active illness all had impacts on the health and availability of firefighters. Wildfire managers and IMTs were constantly adapting to changing disease activity and mitigation protocols as the season developed.

Despite above-average snowpack and normal winter precipitation, drought conditions re-established throughout the spring and summer. From March forward, very little precipitation was received across most of the state. This facilitated an early start to the fire season, with moderate initial attack in many DNR Regions during the spring. Due to the lack of available moisture and warmer weather, the "green-up" period was compressed. This resulted in lower loadings of fine fuels, but early curing of those fuels. Both the Basin and higher elevation timber fuels entered the peak of the season very dry and primed to burn.

Fire season ramped to a high level of activity with the first dry lightning event on July 7, which impacted the Blue Mountains. This storm ignited the Dry Gulch and Lick Creek incidents, which quickly combined to become a Type 1 incident, Green Ridge (Type 2) and two other Type 3 incidents between Walla Walla and Asotin. The PNW Geographic Area Coordination Center (GACC) went to a Preparedness Level (PL) 4, with PL 5 following within a week. Subsequent lightning ignited several large fires in the Spokane area and the Okanogan. The Chuweah and Summit Trail fires were early large fires on the Colville Reservation that were the first of several large incidents to impact the Colville Agency. Other notable fires on the COA included Whitmore, Spur and Walker fires.

Additional lightning in early August ignited the Apple Acres fire near Wenatchee and the Cedar Creek and Delancy fires in the Methow Valley. All three incidents ultimately grew to Type 1 complexity. From this point in the season, approximately 20 additional large fires occurred from Northeast to Southcentral Washington. Improving weather helped contain the final two Type 1 incidents, 25 Mile and Schneider Springs.

The onset of fall-like weather significantly diminished the large fire threat shortly after Labor Day. Initial Attack continued at a light to moderate level until season-ending rains began arriving during the first week of October. DNR Preparedness Level followed the GACC for most of the season, but downgraded to a PL 3 and PL 2 earlier than the GACC due to late summer rain received across most of the state.

Key factors in the 2021 season were the long duration of severe fire danger and difficulty in obtaining resources from customary sources. The extreme fire danger present throughout the West meant that

DNR-JURISDICTION FIRES WERE CONTAINED AT 10 ACRES OR LESS ABOUT 94 PERCENT OF THE TIME IN 2021 — SEVEN PERCENT BETTER THAN THE 10-YEAR AVERAGE.

INCIWEB

In 2021, Washington experienced numerous wildfires, such as the Cub Creek 2 wildfire in Okanogan County.

nearby states and provinces were unable to help as much as usual. DNR procured engines, overhead and crews from North Carolina, Tennessee, Kentucky, Oklahoma, Florida, Mississippi, Texas, Maine and other states. Additionally, Washington resources helped battle blazes in nine other states, dispatching resources from February through September.

Aviation was also staffed much above normal. At the peak, DNR was operating 37 tactical aircraft, including heavy scoopers, heavy airtankers, Type 3, 2, and 1 helicopters and a portable airtanker base was established for several weeks at the Olympia airport.

The DNR Fire Cache supported numerous Type 3, 2 and 1 incidents throughout Washington. Supplies, equipment, vehicles, kitchens, support trailers and other rolling stock were critical in helping interagency incidents achieve their objectives.

The DNR Planning Section provided meteorology services with dedicated National Weather Service IMETs during the peak of activity, and normal fire weather support during the beginning and end of fire season. Constant, ongoing Situation and Fire Intelligence services were also key to success. Planning Section personnel also supported the Northwest Coordination Center with rotational assignments during the peak of the season.

In total, there were 1191 DNR fires and 81% of ignitions were human-caused fires in 2021. One of the notable outcomes of the wildfire season was the proportion of forested versus non-forested area burned in large fire events. Of the 30 large fire events that occurred in Washington State in 2021, 448,537 acres burned in forested areas while 189,006 acres burned in non-forested areas. Additional information about the impacts of shrubsteppe fire on wildlife habitat is included in the Wildlife and Salmon Recovery section of this report.

There were a number of successes in 2021: Despite resurgence of COVID-19 during the summer months, DNR's COVID -19 mitigation protocols resulted in minimal positive cases among DNR firefighters throughout the season, additional aircraft and support from the National Guard and contracted aviation resources aided significantly in fire response, and DNR maintained an excellent safety record. DNR crews, equipment and other resources also helped fight fires in nine other states, including California and Oregon where there were a significant number of mid-season megafires.

Each year, Washington DNR publishes an annual report summarizing outcomes and statistics from the wildfire season. You can find the 2020 wildfire season report here. The 2021 wildfire season report will be published in early 2022 and available on the DNR Wildfire Division website.

For more information about national wildfire statistics visit: nifc.gov/fire-information/statistics

Wildfire in Western Washington

The 2020 wildfire season devastated portions of the western Cascades, particularly in Oregon, where many communities were impacted by the historic Labor Day fires. A conflagration of wildfires destroyed towns and torched thousands of structures, causing billions of dollars in damage. Families and towns across the region suffered catastrophic loss.

Scientists at DNR have published recent studies focused on the history of wildfire in the western Cascades (see Donato, Halofsky, and Reilley 2019). These studies, combined with our understanding of the risks to communities, forest resources and infrastructure are helping to inform DNR actions to better prepare western Washington for future wildfires.

DNR scientists have identified four key actions to address risks posed by western Washington wildfire:

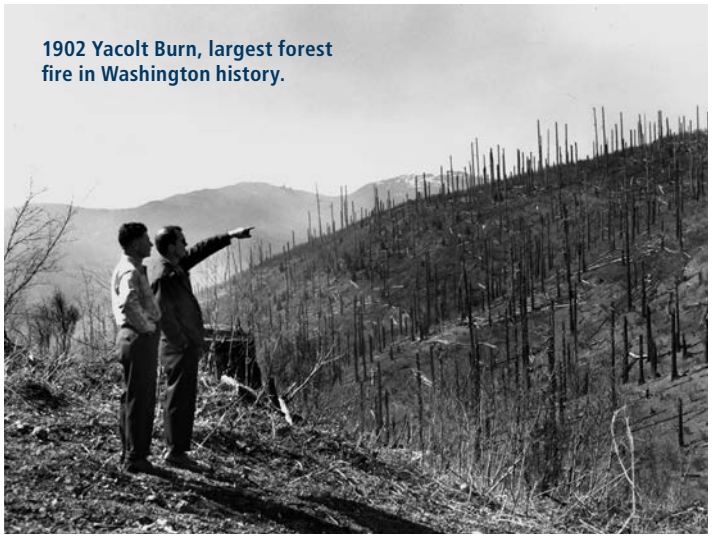
- Reduce human-caused ignition sources, which make up the majority of all fire starts in Washington.
- Rapidly detect and suppress fires in western Washington.
- Prepare communities for natural disasters by integrating Firewise USA principles in and around communities. Establish plans for evacuation routes in the case of a wildfire emergency.
- Address climate change, which is leading to longer, hotter, dryer, and more dangerous wildfire seasons.

Rare fire events, such as those that occurred on Labor Day in 2020, are not without precedence, and in fact, recent large wildfires are similar to what historically occurred in the western Cascades over the last millennia. The 1902 Yacolt Burn (top, right) is a strikingly similar example from southwest Washington.

Are you curious to learn more about wildfire in western Washington?

Check out this article written by two DNR scientists in partnership with University of Washington faculty:

https://crosscut.com/opinion/2021/07/fighting-wildfires-western-wa-requires-different-approaches



1902 Yacolt Burn, largest forest fire in Washington history.

New Legislation Improves Community Wildfire Preparedness and Wildfire Suppression

In addition to providing funding and capacity to improve Washington's ability to address our forest health crisis, the account created by House Bill 1168 will be utilized to improve community wildfire preparedness and increase our state's wildland fire response capacity.

House Bill 1168 will fund many important wildfire response efforts in Washington:

- **The addition of more than 100 full-time wildland firefighters** at DNR and 20 pieces of heavy equipment, such as bulldozers, for initial attack. When not actively fighting fires these new resources can be used to complete forest health projects like fuels treatments and prescribed burns. They will also support wildfire programs and activities to enhance community resilience such as home assessments and the development of Community Wildfire Preparedness Plans.
- **Bolstering DNR aviation capacity** through the purchase of additional aircraft to map and suppress wildland fires and equipment to allow aircraft to operate at night.
- **Increased support to rural fire districts** for wildland fire response.
- **Creation of a new community resiliency investment program** while adding capacity for outreach and support to communities for community wildfire preparedness, Firewise USA, or other work in support of fire-adapted communities.
- **Installation of a remote detection system** to provide real-time information on fire starts statewide.
- **Establishment and coordination** of post-wildfire recovery teams for assessment across all lands.

DNR AND PARTNERS WILL USE FUNDING FROM HOUSE BILL 1168 TO IDENTIFY OPPORTUNITIES TO REDUCE HARM TO VULNERABLE POPULATIONS CAUSED BY WILDFIRE SMOKE.

Impact of Smoke on Human Health

Wildfire smoke impacts everyone in the state, but it is especially dangerous for vulnerable populations. Washington state has at times recorded the worst air quality in the world as a result of wildfire smoke. Exposure to particulate matter causes sore eyes and throat, respiratory and cardiovascular health issues while reducing overall quality of life. Recent research has found that pre-term births may also be linked to exposure to wildfire smoke and associated pollution (Heft-Neal et al. 2021). The researchers evaluated impacts of smoke and particulate matter (PM 2.5) exposure on mothers and babies, finding that for each additional day of exposure to wildfire smoke during pregnancy, there was a 0.49 percent increase in risk of preterm birth. That means that seven days of smoke exposure increases risk of preterm birth by 3.4 percent compared to an unexposed mother.

As part of the implementation of House Bill 1168, DNR and partners will be identifying opportunities to reduce risks of wildfire smoke to vulnerable populations and prioritizing investments in highly impacted communities, many of which are already disproportionately impacted by climate change and pollution.

dnr.wa.gov/fightingfire
Learn more about fighting wildfires in Washington State

BENTON COUNTY FIRE DISTRICT 6 AND JESSICA KIMMICK, WASHINGTON DNR

Volunteer Fire Assistance

In areas served by fire districts and fire departments, volunteer firefighters are frequently the first responders to wildfires. DNR supports fire districts through a suite of programs including access to state surplus fire equipment, access to Federal Excess Personal Property and Firefighter Property programs, and Volunteer Fire Assistance grants.

The Volunteer Fire Assistance (VFA) Program is a cooperative forestry program funded in partnership with USFS. In 2020, $587,619 was awarded to support 184 rural fire districts. In 2021, the program provided $610,671 to support 169 rural fire districts.

The objective of the VFA program is to improve the capacity and capability of rural and volunteer fire districts.

The program is focused on supporting:

- Rural fire districts serving a population of 10,000 or less.
- New fire districts.
- Fire districts with a volunteer membership that is 80% or greater.
- Fire districts which aid in state and federal fire response.
- Fire districts in need of additional resources.

SUCCESS STORY

BENTON COUNTY, FIRE DISTRICT 6

Benton County Fire District 6, which serves Paterson and Plymouth, was awarded a VFA grant in 2020 to retrofit a 24-foot jet boat and make the craft available for fire suppression and public safety along thirty miles of Columbia River shoreline. The shoreline has limited road access and fire starts along the river are often difficult to access from shore.

The retrofitted boat was previously used by the Benton County Sheriff's Department and was sold to the fire district through a mutual aid agreement. A Volunteer Fire Assistance grant helped the district purchase a pump and firefighting equipment for the boat. By early 2021 the boat was put into service and since that time has been called on for several emergencies on the Columbia River. The Tri-City Herald featured Benton County Fire District 6 and the VFA grant in a news article on August 22, 2021.

Wildfire Ready Neighbors

In 2021, DNR launched Wildfire Ready Neighbors to help communities and homeowners prepare for future wildfire events. The program included three pilot locations in Spokane, Okanogan, and Chelan Counties. Each campaign ran for six weeks and connected homeowners with wildfire experts from local fire districts, conservation districts, DNR, and tribal partners – who could help them craft a Wildfire Ready Plan in line with the individual's property, budget, and lifestyle.

Wildfire Ready Neighbors Project Goals

- Motivate people in high-risk areas to take action and become wildfire-ready.
- Raise awareness and provide preparedness plans residents can follow to build wildfire resiliency for both the short and long-term.
- Build a simple and replicable program framework and brand that can be easily adopted in communities across Washington.
- Continue to grow and deepen community relationships around issues of wildfire and resiliency.

The pilot project resulted in 1,167 individual landowners and homeowners across three counties signing up to receive a wildfire risk assessment. The project confirmed the tremendous demand from individual homeowners for tools to support their efforts to build resilience to wildfire at a community level. DNR and partners will expand the Wildfire Ready Neighbor program in 2022 to cover more of eastern Washington.

"I would like to see Wildfire Ready Neighbors expanded to the rest of the Colville reservation and CCT communities in Ferry County."

IKE CAWSTON JR.
Mt.Toleman Fire

Dual Benefit Analysis: Integrating Wildfire Response and Forest Restoration

In 2019, the Washington State Legislature passed House Bill 1784, which requires DNR to emphasize treatments that will have both a forest health benefit as well as a benefit for wildfire response operations into our all-lands Forest Health Assessment and Treatment Framework in support of the 20-Year Forest Health Strategic Plan: Eastern Washington.

House Bill 1784 amends RCW 76.06.200, the Forest Health Assessment and Treatment Framework, to require the prioritization of forest health treatments that maximize forest health outcomes and planned tools for wildfire response operations.

Key text from House Bill 1784

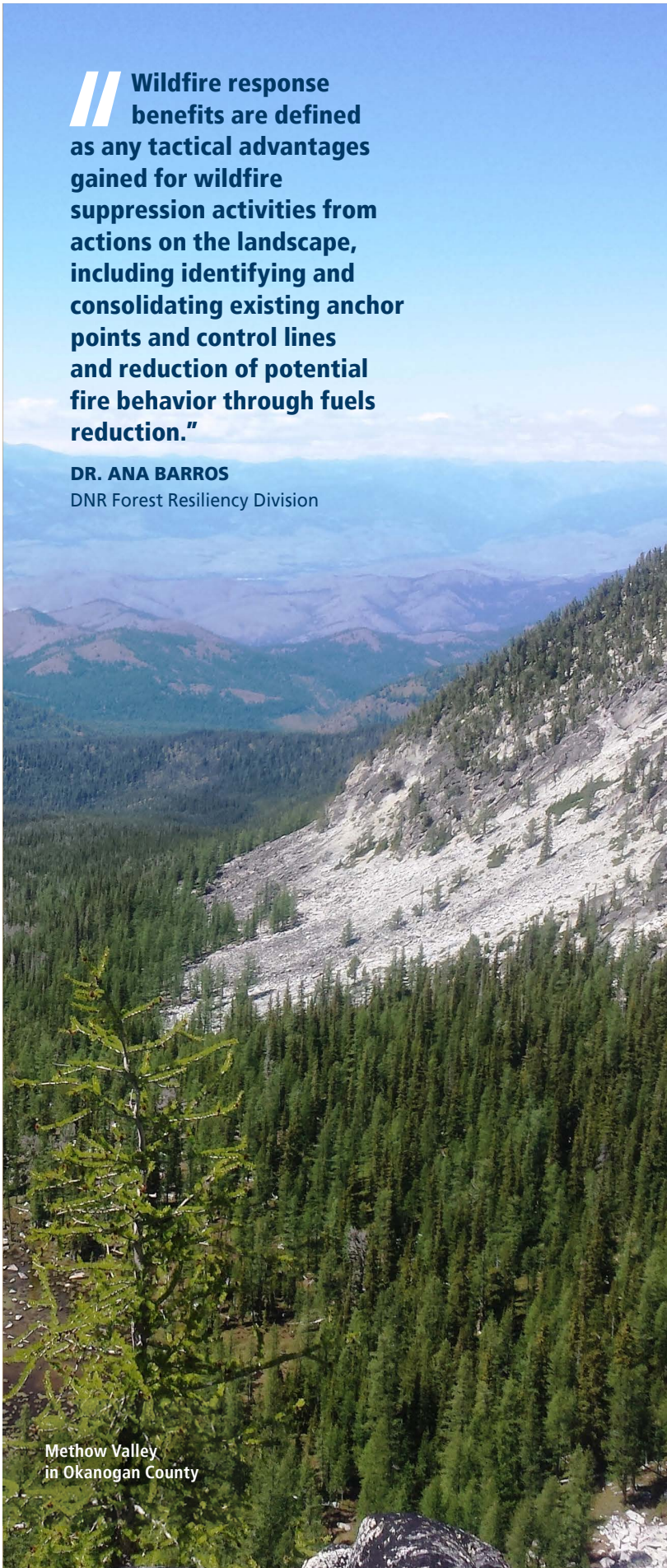
"Prioritize, to the maximum extent practicable… forest health treatments that are strategically planned to serve dual benefits of forest health maximization while providing geographically planned tools for wildfire response."

"…attempt to locate and design forest health treatments in such way as to provide wildfire response personnel with strategically located treated areas to assist with managing fire response."

"…attempt to maximize the firefighting benefits of natural and artificial geographic features and be located in areas that prioritize the protection of commercially managed lands from fires originating on public lands."

The Forest Resiliency Division of DNR collaborated with a technical team and local partners to pilot the new methodology in three priority areas: Methow Valley, Cle Elum, and Leavenworth. The analysis considers high-value resources, potential control lines, and potential operational delineations, along with local knowledge, to identify strategic locations for fuels treatments. Integrating landscape-scale forest restoration with operational aspects of wildfire suppression will increase the effectiveness of future wildfire response, improve wildland firefighter safety, and provide land managers with opportunities to utilize wildfire for resource benefit. The results of the dual-benefit analysis will be integrated into landscape evaluations for each priority landscape in eastern Washington, as described in the Landscape Resilience section of this annual report. Additional priority landscapes will receive dual-benefit analysis in 2022.

BREWBOOKS

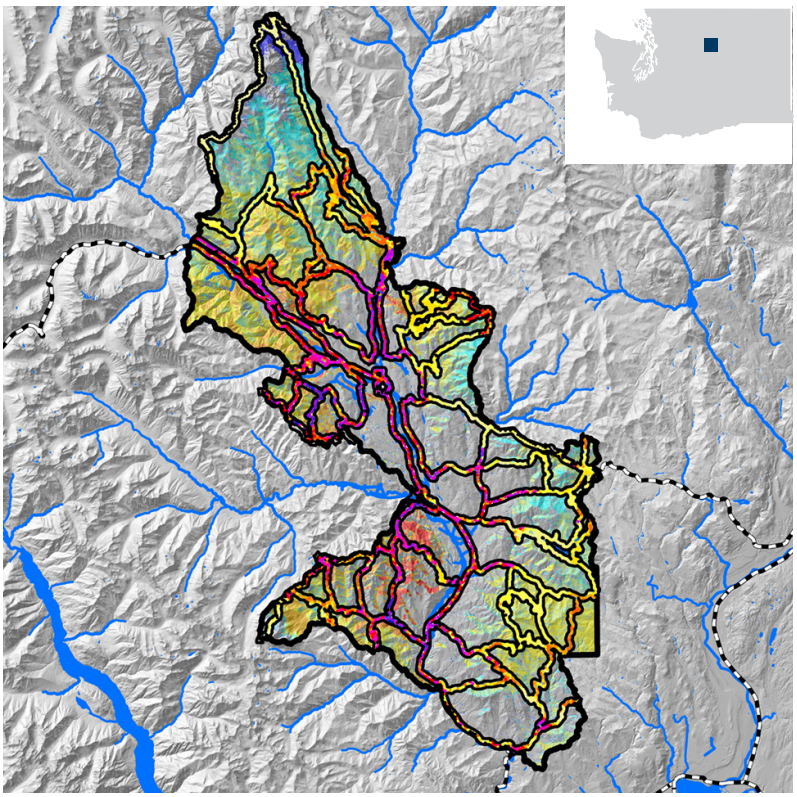


"Wildfire response benefits are defined as any tactical advantages gained for wildfire suppression activities from actions on the landscape, including identifying and consolidating existing anchor points and control lines and reduction of potential fire behavior through fuels reduction."

DR. ANA BARROS
DNR Forest Resiliency Division

Methow Valley in Okanogan County

GARRETT MEIGS



EXAMPLE OF METHOW VALLEY DUAL BENEFIT ANALYSIS FOR WILDFIRE SUPPRESION

In the Methow Priority Landscape, DNR scientists delineated potential control lines (PCLs) and Potential Operational Delineations (PODS), which identify locations that are likely to aid in future wildfire suppression.

Landscape Treatment Priority (across PODs)

High

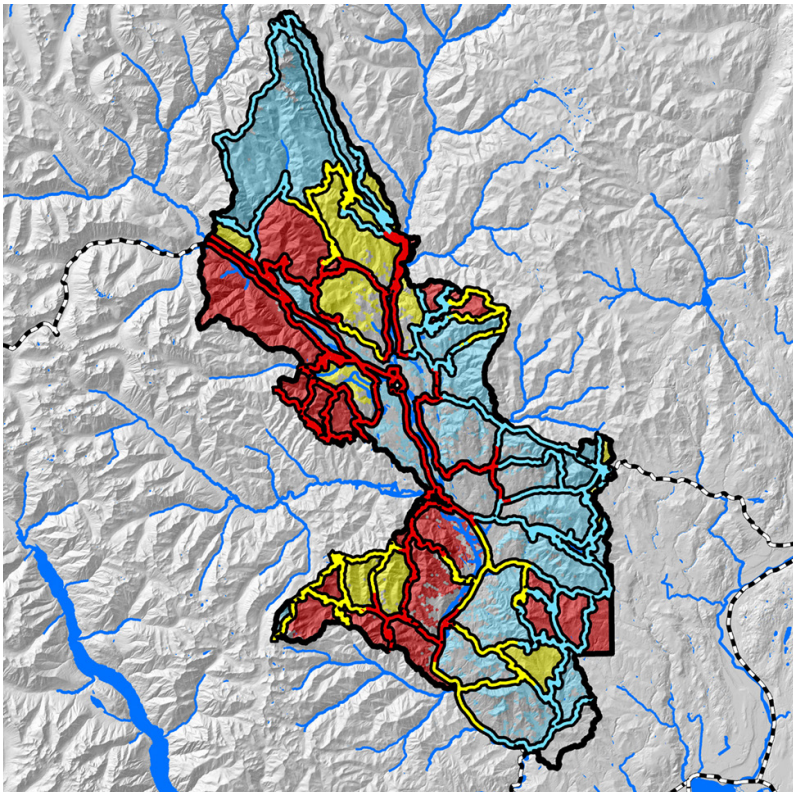
Low

Wildfire Response Benefit (within PCLs)

High

Low

Potential Control Line (PCL)



Priority Ranking

PCL	POD
1	1
2	2
3	3

DEREK CHURCHILL

This Western Larch parkland southwest of Wenatchee is an example of a forest historically maintained by frequent, low-intensity fires. It is often used for educational opportunities as an example of a well-managed tree stand.

KEEPING FORESTS AS FORESTS

"The short-sighted conversion of working forests in Washington presents a clear and dire threat to our environment, economy and communities that depend on healthy forests."

HILARY FRANZ
Commissioner of Public Lands

Washington State Rep. Kirsten Harris-Talley, D-Seattle, speaks at the Webster Forest Nursery in support of the bipartisan Keep Washington Evergreen initiative championed by Commissioner Franz.

Forests provide tremendous values to society — not just environmental ones, but economic stability, animal habitat, recreational outlets, cultural connections and more. As the Evergreen State, forests are central to our identity. However, the total amount of forested land in Washington is on the decline. Washington has lost more than 1.5 million acres of forest since 1978 to private development (Bradley et al. 2007).

According to a 2020 University of Washington report to the Washington legislature, an estimated 25,000 to 50,000 small forest landowners are likely to sell all or some of their forest land over the next decade. The urgent need to address forest conversion requires a collaborative and coordinated approach with partners across the state. The Forest Action Plan committed to:

- **Expand efforts to ensure sustainable food and timber production** by conserving working farms and forests, securing water resources, and protecting high-productivity soils in the face of population growth.
- **Enhance retention of working forestland** held by small forest landowners.
- **Enhance and develop incentives**, ensure effective administration of regulations, and foster sharing of information among relevant agencies and partners protecting and restoring ecologically important forestlands.
- **Explore innovative approaches** to conservation finance tools to address forest loss, such as expansion of federal programs to conserve forests, in the 2023 Farm Bill.

New reports emphasize how the loss of forests puts ecological, socio-cultural, and economic values at risk:

- **Forests and trees contribute to a high quality of life.** Research shows that people with access to urban forests experience stress reduction, improved mental health, and reduced harm from heat exposure (Wolf et al. 2020)
- **Washington is the second largest producer of lumber in the country,** supporting 42,000 workers and more than 1,700 forest products businesses that generate more than $28 billion in gross business income annually (Washington State Department of Commerce).
- **Forests in Washington State sequester** an estimated 13.7 million metric tons of carbon dioxide each year, the annual equivalent of the energy used by 1.6 million homes (DNR 2020, EPA Greenhouse Gas Equivalencies Calculator 2021).

Keeping Washington Evergreen

DNR recognizes the need for bold action to tackle the multi-faceted threats facing our forests, and has responded in 2021 with ambitious goals:

- **One million acres of forest health restored;**
- **One million acres of working and natural forest conserved; and**
- **One million acres replanted by 2040.**

One million restored

Grounded in the recognition that forests must be healthy in order to be resilient to increasingly severe wildlands fires, DNR's 20-Year Forest Health Strategic Plan has already set the goal of restoring 1.25 million acres of forest to healthy conditions by 2037. With the passage of HB 1168, DNR secured critical funding necessary to begin tackling this problem at scale, and accelerate implementation of this goal.

One million conserved

Washington's forests are threatened by more than just wildfire, and without action we risk protecting them from natural disaster, just to lose them later to development. Recognizing the wide spectrum of benefits that forests provide to communities, DNR will identify and prioritize our most valuable forests — according to a broad range of environmental, social, and economic criteria —and harness the potential of carbon markets, assistance to small forest landowners, community forests, and other innovation conservation models to keep working forests working and our most special forested areas maintained and protected.

One million replanted

With the pace and scale of forest loss due to climate change and our growing population, it is not enough to simply restore and protect the forests and tree cover that remain today—we must be proactive in replanting. DNR and partners will replant trees across one million acres, including burned areas, as well as places that were once forested and can sustainably support forest cover into the future. Furthermore, recognizing the historical decline and inequity of tree canopy cover in urban areas, our replanting efforts will seek to increase urban tree canopy cover, prioritizing our most vulnerable communities who are also least likely to have adequate tree cover.

Forest Legacy Program: 2020-2021 Funded Projects

The 2020 State Forest Action Plan highlighted two cooperative forestry programs that provide financial resources aimed at protecting working forestlands: the USDA Forest Legacy Program and USDA Community Forest and Open Space Conservation Program.

The USDA Forest Legacy Program protects land at risk of development through conservation easements and land purchases. The program requires the removal of development rights, ensuring forests remain as forests in perpetuity. In 2020, Washington State was awarded $7.25 million for two proposals: Dewatto Headwaters Forest Phase II ($5.25M) and Yacolt Forest Phase I ($2M). Washington State received another round of federal funding in 2021 for two proposals totaling $9.24 million: the Dewatto Headwaters Forest Phase III ($5.64M) and Yacolt Forest Phase II ($3.6M).

Maintaining Washington State's competitiveness for USDA Forest Legacy Program funds will require an update to Washington's Forest Legacy Program Assessment of Need (AON). The AON was published in 2002. More accurate data and mapping tools have emerged during the previous 20 years. Those will contribute to an updated AON that will help the state identify private forestlands at risk of development and prioritize areas for future Forest Legacy Program applications. In 2022, DNR anticipates initiating an update to the AON in collaboration with other state and federal agencies, as well as partners at the nonprofit and local levels.

Replanting trees in areas that can sustainably support forests and tree cover is central to Keep Washington Evergreen.

TEGRA STONE NUESS

SUCCESS STORY

DEWATTO HEADWATERS FOREST

The Dewatto Headwaters Forest is a 2,158-acre conservation project on the Kitsap Peninsula along Hood Canal. The project lies within the Kitsap-Shelton Priority Landscape in the Forest Action Plan. The Dewatto Forest is managed for multiple values including timber production, fish and wildlife habitat, and public access. The forest is an hour drive west of Seattle, making it a popular recreation destination. Given its proximity to Seattle, the forest was also at risk of luxury residential development. The Trust for Public Land, in partnership with Great Peninsula Conservancy, Rayonier, and the U.S. Navy have successfully conserved the forest through the Forest Legacy Program.

"As we see accelerating demographic shifts in our Country related to climate change and other factors, we will continue to see extraordinary growth in the number of people in the Pacific Northwest. This growth is starting to have real implications on our natural open spaces, rural communities and traditional rural economies. For once, we are ahead of the curve in protecting these lands, these environmental resources and these communities. The Trust for Public Land is incredibly grateful to the Washington Department of Natural Resources, the US Forest Service, the US Navy, Great Peninsula Conservancy and the Rayonier Timber company for their collaboration in making this landscape scale conservation work possible. If you get a chance please get out and see the extraordinary productivity and stunning natural beauty of these lands."

RICHARD CORFF
Washington Director of Land Conservation,
Trust for Public Land

Community Forests

Community forests are a growing part of the fabric of forested landscapes in Washington State. Significant progress has been made in expanding community forests over the last year. A 2021 Trust for Public Land report defines community forests as lands that are largely forested and that rather than being united in any specific uses of the forestland, are instead defined by the following characteristics:

- Monetary and nonmonetary benefits from the land flow directly to the community and reflect community priorities and values.
- The land's public values are permanently protected in perpetuity.
- The land is owned and managed by a local government, tribal government or community-based organization on behalf of a community.
- There is community participation in, responsibility for, and accountability for management and use of the land.

Community owned and managed forests are helping re-establish connections with our working forest heritage while supporting forest and community resilience. Washington continues to be a leader in adopting the USDA Community Forest and Open Space Conservation Program. Washington was awarded two grants in the past two years totaling $1.2 million in federal funding to support permanent conservation of 595 acres of forestland near the City of Ilwaco and on the Kitsap Peninsula. The new community forests will be managed by local community groups, including municipalities and land trusts.

The Washington Legislature created a new Community Forest Program in 2019 in response to growing interest in community forests. Washington is one of the first states to create a state-funded matching program focused on community forests. The program is administered by the Recreation and Conservation Office (RCO) and provides financial resources to communities that acquire working forestlands. The purpose of the program is to protect and maintain actively managed forestlands, consistent with local land use planning.

Fragmentation and development of forests result in greater risks of impact to communities from wildfire and climate change and deprives communities of the economic, environmental, cultural, recreational, and educational opportunities a community forest can provide. The Community Forests Program provides a source of funding to help communities protect and

The Teanaway Community Forest sits on more than 50,000 acres at the headwaters of the Yakima Basin watershed. It is collaboratively managed by Washington DNR and WDFW.

enhance their surrounding forestlands by acquiring land and developing collaborative models of community-based forest management.

RCO has awarded more than $15.6 million in funding since 2019 to support the creation or expansion of six community forests in Washington State. Project partners leveraged an additional $7.7 million to support program goals. Collectively, these community forests are anticipated to protect 8,384 acres of forestland from development. The amount of grant funding requested through the Community Forest Program was more than double the amount of grant funds available. **You can learn more about the Washington RCO Community Forest Program by visiting: https://rco.wa.gov/grant/community-forests-program/**

Local Community Forest Receives National Recognition

Trust for Public Lands published Community Forests: A Path to Prosperity and Connection in 2021. The report includes case studies from across the country, including a feature piece focused on the Mount Adams Community Forest (MACF) near Glenwood, Washington. MACF covers 965 acres and is managed by Mount Adams Resources Stewards (MARS), a local community-based nonprofit. An economic analysis of MARS stewardship activities found that from 2013 through 2017, their work generated $610,000 in direct gross timber receipts, 5.5 months of full-time equivalent employment and $26,000 in timber excise tax paid to the local community. MARS also has a program in place to harvest and deliver firewood for local senior citizens. The forest restoration and management projects on MACF contribute to reduced wildfire risk, helping to protect adjacent forestlands and agricultural lands near the community forest. Learn more about the report and read the Mount Adams Fact Sheet.

Forest Conservation and Wildlife

NRCS offers the Healthy Forests Reserve Program (HFRP) to conserve forest lands that provides habitat for threatened and endangered species and species of greatest conservation need while building resilience to climate change. The Washington Wildlife and Recreation Program (WWRP) funds Forestland Preservation grants to purchase conservation easements that protect working forests.

Expanding Conservation Tools: Transfer of Development Rights

Innovative tools for new resources to prevent forest conversion were developed in 2021, with particular progress around transfer of development rights. Transfer of Development Rights (TDR) is a market-based tool that allows private developers to purchase a conservation easement on private forest and farmland in exchange for additional building height or density than would otherwise be allowed. The program has increased growth and development in areas with infrastructure and augmented conservation of working lands that are important to rural livelihoods and communities. Forterra, a conservation non-profit based in Washington, developed the policy and piloted the program in Seattle. Numerous counties and municipalities have also recently established TDR programs including Pierce, Snohomish, Kittitas, Kitsap, and Skagit Counties as well as the cities of Issaquah, Sammamish, Tacoma, Bellevue, and Mountlake Terrace.

Since establishment of the pilot program, TDR has supported 60 developments and permanent conservation of 100,000 acres of forest and farmland in Washington. Washington policymakers are exploring ways to expand use of TDR to support thriving communities and permanent conservation of working forests. Watch a video to see an example of how TDR is being applied in the City of Seattle to incentivize development in cities, conserve working lands and generate new funding for infrastructure.

Watch a video to see an example of how TDR is being applied in the City of Seattle to incentivize development in cities, conserve working lands and generate new funding for infrastructure.

ERIN BANGLE / PACIFIC EDUCATION INSTITUTE (PEI)

Students at On Track Academy in Spokane participate in an urban tree planting project as part of an outdoor-based STEM curriculum developed in partnership with the Pacific Education Institute.

URBAN AND COMMUNITY FOREST RESILIENCE

// The legislature finds that preservation and enhancement of city trees and urban forests contribute to multiple benefits, including stormwater management, carbon sequestration, local air and water quality enhancements, and fish and wildlife habitat, and is a cost-effective way to meet these objectives."

**HOUSE BILL 1216
SECTION 1.1**

The Urban and Community Forestry Program at DNR supports planning, planting, and maintenance of trees in Washington communities. Tree cover enhances quality of life and provides benefits for human health, ecological services, and fish and wildlife.

DNR provides grants to support forests in urban landscapes and communities. Grant funds in 2020-2021 supported Urban Tree Canopy Assessments, Urban Forest Management Planning, tree planting, education and outreach, and technical assistance. Grant funds are provided through a partnership with USFS. DNR has awarded more than 180 grants across the state since 2008, providing more than $1,937,000 in funding to community partners. Click here to learn more about the location and purpose of grant awards.

The 2021 Washington State Legislature passed Engrossed Second Substitute House Bill 1216, which increases DNR's Urban and Community Forestry capacity by expanding the Evergreen Communities Act and increasing available resources to:

- **Provide technical assistance** to cities, counties, and federally recognized tribes to establish and maintain urban and community forestry programs.
- **Promote urban and community forestry** through development and coordination of policies and ordinances, educational programs, and planning activities.
- **Engage the Washington Community Forestry Council** in advising DNR in development and administration of the program.
- **Assist municipal and county tree maintenance programs** by providing access to surplus equipment.
- **Partner with nonprofit organizations** and other groups to educate the public about tree planning, planting, establishment, care, and long-term maintenance.
- **Enhance volunteer programs** that engage communities in urban and community forestry.
- **Conduct a statewide inventory of urban and community forests** in line with the protocols established by USFS. Evaluate opportunities to achieve multiple benefits by analyzing tree canopy cover and urban forestry inventory data, health disparity mapping tools, salmon and orca recovery data, and priorities identified in the DNR 20-Year Forest Health Strategic Plan: Eastern Washington.
- **Develop an Evergreen Community Designation Program.** The program will recognize communities that have developed an excellent urban forest management program.

Environmental Justice and Equity

House Bill 1216 requires that DNR utilize at least 50 percent of available Urban and Community Forestry resources to support vulnerable populations and highly impacted communities. “Highly impacted community” is defined in RCW 19.405.020 as "a community designated by the department of health based on cumulative impact analyses in RCW 19.405.140 or a community located in census tracts that are fully or partially on "Indian country" as defined in 18 U.S.C. Sec. 1151.”

In addition, the legislature passed Engrossed Second Substitute Senate Bill 5141, also known as the Healthy Environment for All (HEAL) Act. The HEAL Act codifies the recommendations of the Environmental Justice Task Force convened by the state and requires state agencies to factor environmental justice into many of their core functions. These include drafting environmental justice implementation plans and conducting environmental justice assessments as part of significant agency actions, as defined in Senate Bill 5141.

The cumulative impact analysis identifies communities negatively impacted by fossil fuel pollution and climate change. The analysis is conducted by the Washington State Department of Health (DOH) with support from University of Washington Department of Environmental and Occupational Health Sciences.

In August 2021, the South Seattle Emerald featured an article Hilltop Park in the City of Burien where local and state partners are working together, for people and forests. Burien Park, Recreation & Cultural Services worked with DNR for an environmental justice forestry initiative grant to incentivize students to work in the park, aspiring to get high school interns and BIPOC community members to become forest stewards.

An Environmental Health Disparities Map was produced by DOH to share information with the public about highly impacted communities. The map includes data on environmental exposure, environmental effects, sensitive populations, and socioeconomic factors.

ERIN BANGLE / PACIFIC EDUCATION INSTITUTE (PEI)

On Track Academy students planting a tree in the neighborhood near the school.

SUCCESS STORY

PACIFIC EDUCATION INSTITUTE

Pacific Education Institute (PEI) received a DNR Urban and Community Forestry grant in 2020. PEI partnered with On Track Academy, an alternative high school in Spokane, to provide outdoor-based STEM education training for teachers and administrators. As a result of the professional development and training opportunity, teachers led students to investigate the relationship between urban tree cover and socioeconomic conditions, inventory urban trees and canopy cover using iTreeCanopy and iTreedesign, and engage their neighborhood in a tree planting event. The project also expanded student perspectives of the urban forestry career path by providing access to local practitioners and experts. The curriculum included a lecture from the City of Spokane's Urban Forester, a representative from Idaho's Franklin H. Pitkin Forest Nursery, and a landscape architect. The outcomes of the program, combined with strong interest and empowerment among students and faculty, led On Track Academy to receive a Founding Campus designation from the Tree Campus USA – K-12 Program. By being named a Founding Campus, the school will be the first in the United States to fly the Tree Campus K-12 flag. Fewer than 10 schools across the country have earned the Founding Campus designation. Read more about this project in TreeLink News.

Washington DNR is accepting applications for 2022-2023 Urban and Community Forestry grants through March 4. Click here to learn more.

PHOTO BY KEN BEVIS / DNR

Forest health treatments not only make forests more resilient, they create much-needed jobs for rural towns and communities across Washington.

RURAL ECONOMIC DEVELOPMENT

FULL IMPLEMENTATION OF THE 20-YEAR FOREST HEALTH STRATEGIC PLAN WOULD RESULT IN AN ANNUAL AVERAGE OF 1,518-2,572 FULL-TIME EQUIVALENT JOBS.

78 CENTS OF EVERY DOLLAR SPENT ON FOREST HEALTH SUPPORTS INCOME FOR A WASHINGTON RESIDENT.

Forest and community resilience is inextricably linked to rural economic development in Washington. Rural communities are actively participating in the restoration economy, enhancing forest resilience while at the same time creating jobs and economic activity. Highlights from this past year include both an increased understanding of how our strategic plans can contribute towards economic development and community investments at the forefront of creativity and efficiency in advanced forest products manufacturing.

Economic Impacts of 20-Year Forest Health Strategic Plan: Eastern Washington

Washington was one of two states selected in 2021 to participate in a United States Climate Alliance initiative to evaluate the economic benefits of implementing climate resilience strategies. The Alliance, along with RTI International, a nonprofit research group, conducted an analysis of the 20-Year Forest Health Strategic Plan: Eastern Washington. The study found that implementing forest health treatments offers Washington a significant economic opportunity.

The 20-Year Forest Health Strategic Plan establishes a goal of conducting 1.25 million acres of forest treatments by 2037. Treatments are focused in 39 priority landscapes and include all public, private, and tribal forestland owners. The analysis found that implementing DNR's forest health strategies would provide significant support to eastern Washington's logging and forestry services sectors, their suppliers, and local communities. Full implementation of the plan would support in an annual average of 1,518-2,572 full-time equivalent jobs.

"Every $1 million spent on forest health supports 20-24 total jobs inclusive of direct, indirect, and induced effects."

DNR is responsible for management activities and forest health treatments on state trust lands in eastern Washington. Given this important contribution to achieving DNR and statewide goals, RTI International evaluated the economic impact of implementing forest health treatments on between 336,000 and 432,000 acres of state trust lands. The analysis found that implementing these forest health treatments on DNR state trust lands in eastern Washington over 20 years will require $9.8-13.2 million annually and support 199-272 full-time equivalent jobs.

Read the RTI International report.

Community Resilience and Rural Livelihoods

The Oso landslide forever changed Snohomish County and Washington State. On March 22, 2014, a devastating slurry of mud and debris completely destroyed a rural neighborhood, killed 43 people and buried 49 homes.

Recovery from natural disasters takes committed community leaders and strong partnerships. Six years after the landslide, the small town of nearby Darrington, which became isolated and cut off when the slide blocked state Route 530, has made significant progress in setting a statewide example as a burgeoning, resilient community.

Darrington Mayor Dan Rankin announced the establishment of a cutting-edge, world class Wood Innovation Center in 2020 alongside other elected officials and nonprofit partners. The Center will sit on 94 acres northwest of town and house wood-based businesses, including a mass timber manufacturing facility and modular home construction.

"Darrington has deep roots in the timber industry going back generations," said Darrington Mayor Dan Rankin. "Wood has been an integral part of our community and through mass timber, it will continue to be part of our future. The Darrington Wood Innovation Center will create new, innovative jobs that embody the spirit of our community. By bringing mass timber and Cross-Laminated Timber (CLT) production to Darrington, the new center will continue to make possible a livelihood that allows folks to live, work and play in this incredible place we call home."

The project received more than $8 million in 2020-2021 grant funding, including a State of Washington Community Economic Revitalization Board (CERB) award and an Economic Development Administration (EDA) award. The total cost of the facility is estimated to be more than $73 million. The project is being developed in partnership with Snohomish County and Forterra, a Washington-based nonprofit. The Wood Innovation Center is a tangible outcome that reflects the fortitude and resilience of Washingtonians, our unfailing ability to innovate and adapt, and our strong connection to working forestlands.

JOE MABEL

THE OSO SLIDE MEMORIAL HIGHWAY COVERS A 23-MILE STRETCH OF HIGHWAY 530 BETWEEN DARRINGTON AND ARLINGTON, NEAR THE SITE OF THE 2014 OSO LANDSLIDE.

FORTERRA

THE DARRINGTON WOOD INNOVATION CENTER

The Darrington Wood Innovation Center is expected to create about 150 family-wage jobs in rural Washington and demonstrate the scalable value of cross-laminated timber in Washington.

"Wood has been an integral part of our community and through mass timber, it will continue to be part of our future. The Darrington Wood Innovation Center will create new, innovative jobs that embody the spirit of our community. By bringing mass timber and Cross-Laminated Timber (CLT) production to Darrington, the new center will continue to make possible a livelihood that allows folks to live, work and play in this incredible place we call home."

DAN RANKIN
Mayor of Darrington, Washington

STEWARDSHIP OF FAMILY AND WORKING FORESTS

"Somewhere between 25,000 and 50,000 small forest landowners are likely anticipating selling all or some of their forest land in the coming 10 years. Somewhat fewer than 1 in 10 current SFLOs have likely ever sold or given away some, but not all, of their forest land."

WASHINGTON'S SMALL FOREST LANDOWNERS IN 2020: STATUS, TRENDS, AND RECOMMENDATIONS AFTER 20 YEARS OF FORESTS AND FISH

Working forests are managed for a diverse suite of values – wildlife habitat, aesthetics, privacy, sustainable timber production, carbon sequestration, and water. Preserving working forests is critical to maintaining overall ecological function of forest landscapes and supporting the state's economic, social, and cultural values. Working forests are largely in private ownership, thus engaging with private landowners to better understand their management priorities and barriers to successfully meeting their land management objectives is an important step in maintaining the state's working land base.

The 2020 Forest Action Plan recognized that a soon-to-be-released report would inform implementation to support small forest landowners and maintain working forests. This report analyzing the issues and barriers facing small forest landowners (SFL) in the state was required by Engrossed Substitute Senate Bill 5330 passed by the Washington legislature in 2019. The analysis was conducted by University of Washington scientists in collaboration with Washington Forest Practices Board. Washington's Small Forest Landowners in 2020: Status, Trends, and Recommendations after 20 Years of Forests and Fish was completed in January 2021. It has informed discussions about and historic investments in our stewardship forestry programs.

Report Highlights: Washington's Small Forest Landowners in 2020: Status, Trends, and Recommendations after 20 Years of Forests and Fish

Small forest landowners (SFL) manage 15% of all forest ownership in Washington State. Between 2007 and 2019 the number non-industrial private forest acres declined about 3.7 percent from 2.99 million to 2.88 million, resulting in in fragmentation and conversion of forest lands, primarily to residential development. Small forest landowners with smaller parcels were more likely to sell their land. Researchers found that action was most often triggered by personal or family financial needs. It is anticipated that an additional 25,000 to 50,000 small forest landowners will sell all or part of their forestland over the next 10 years. The report makes a number of recommendations to address conversion risk among small forest landowners:

- **Provide additional and secure funding** for DNR's SFL Office as well as other public organizations offering outreach, education, and technical assistance to SFLs. In addition to existing focuses on forest health and timber production, include assistance with Alternate Plans, forest succession and legacy planning, and non-timber management objectives in outreach and education topics.
- **Support policies that increase forest cover** and forest connectivity in a way that is consistent with forest health.
- **Expand Designated Forest Land taxation rules** to include non-harvesting objectives.
- **Discourage additional development** near existing small forest land.
- **Provide additional funding** for the Family Forest Fish Passage Program.
- **Provide stable support** for ongoing SFL spatial and survey data collection and research collaborations.

dnr.wa.gov/sflo
Learn more about the Dept. of Natural Resources Small Landowner Office

Bolstering Support for Small Forest Landowners in Washington

Passage of House Bill 1168 directly addresses the findings and recommendations from the report to the legislature and will accelerate the goals and priority actions identified in the Forest Action Plan. The legislation provides funding and direction to establish an integrated forest health program for small forest landowners, greatly expanding access to technical assistance for private landowners. The bill also directs DNR to:

- **Establish an integrated program** that promotes coordination and delivery of services with federal, state, and local agencies including local fire districts, conservation districts, and community wildfire resilience coalitions, forest landowner associations, colleges and universities, landowner assistance organizations, consultants, forest resource-related industries, and environmental organizations.
- **Identify and remove barriers** to technical assistance, funding, and forest management planning. Increase education and outreach to small forestland owners.
- **Develop a mapping tool** to identify small forestland owners within wildfire risk areas and use this tool to evaluate and optimize forest health work at a landscape scale with the greatest impact for wildfire prevention, preparedness, and response.

WSU EXTENSION

Above: Washington State University Extension Forester, Andy Perleberg, assisting a non-industrial private forest owner in eastern Washington.

"The establishment of an integrated program focused on serving small forest landowners is a total game changer for Washington State and extension forestry. When I started in Washington, we had nine faculty. Today, we only have two. House Bill 1168 represents a tidal change in support and resources for small forest landowners. It will dramatically increase our collective capacity and establish permanent, full-time assistance to support forest landowners. WSU Extension looks forward to working with DNR and other partners to get this new program up and running."

ANDY PERLEBERG
Regional Extension Specialist and
Forestry Team Leader, Washington State
University Extension

JEROME CHARAOUI (CHARAJ)

WILDLIFE AND SALMON RECOVERY

KNOWING THE THREATS FACING WASHINGTON'S FORESTS, IT IS CLEAR THAT FORESTLAND MANAGERS MUST ALIGN AROUND SHARED PRIORITIES AND WORK ACROSS PROPERTY LINES TO ADVANCE BOLD AND STRATEGIC SOLUTIONS.

Conservation and protection of fish and wildlife is a priority identified in the state's Shared Stewardship Investment Strategy and a common theme across strategic plans and reports that guide agency action related to forest conservation and management. The Washington State Wildlife Action Plan identified 268 species of greatest conservation need (SGCN) that are forest-dependent. Forest Action Plan priority actions aim to support WDFW and partners engaged in efforts to protect and restore habitat, maintain and improve habitat connectivity, and address emerging threats to fish and wildlife posed by climate change. This annual report highlights projects to benefit wildlife and salmon recovery in Washington.

WDFW has identified 268 species of greatest conservation need that depend on forest habitat. Examples include salmon, steelhead, bull trout, northern spotted owl and grizzly bear. Several of these species are listed for protection under the federal Endangered Species Act (ESA). Forests also provide habitat for game species including forest grouse, deer, elk, black bear and cougar.

WSDOT

SUCCESS STORY

SHARED STEWARDSHIP

Washington Dept. of Fish and Wildlife (WDFW) is working with the Washington State Dept. of Transportation and U.S. Forest Service (USFS) under a Good Neighbor Authority (GNA) agreement to correct five fish passage barriers on Highway 20 on the Colville National Forest and WDFW's Sherman Creek Wildlife Area. These projects will restore access to over 12 miles of stream habitat for redband trout, a species of greatest conservation need threatened by water quality issues and barriers that fragment populations.

A New Tool to Visualize and Monitor Changes In Forest Habitat Connectivity

Human-related development and climate change are driving increased rates of forest cover loss and fragmentation, with tremendous implications for the viability of our region's forest ecosystems. **TerrAdapt**, a new tool for Washington, uses Google Earth Engine to continuously monitor landscape change and project shifts in habitat and connectivity as a result of ecological disturbances and climate change. In addition to monitoring and future projections, it also allows a retrospective look at the past 30 years of available data, providing a benchmark for launching monitoring of the Forest Action Plan. These capabilities have the potential to vastly improve situational awareness among land managers and decision-makers at both statewide and regional scales, and will continue to be developed to meet user needs.

Preliminary results from **TerrAdapt** reveal widespread changes in forest ecosystems across Washington State over the past 30 years. From 1990-2005, the temperate forests typical of the west side lowlands experienced a rapid increase in the area of forest cover and forest connectivity. This was driven primarily by forest regeneration on federal lands after widespread logging during the 1980s. Since 2005, increasing forest cover loss from urban expansion along with steady rates of timber harvest is increasingly shifting the balance towards forest cover loss (Figure 1, next page).

"Working collaboratively across boundaries through shared stewardship to do the right work, in the right place, at the right scale contributes to landscape scale wildlife conservation efforts and complements other efforts, including Secretarial Order 3362 aimed at improving habitat on big game winter range and migration corridors managed by the Department of Interior and Bureau of Land Management."

MIKE KUTTLE JR.
Shared Stewardship Coordinator,
Washington Department of Fish and Wildlife

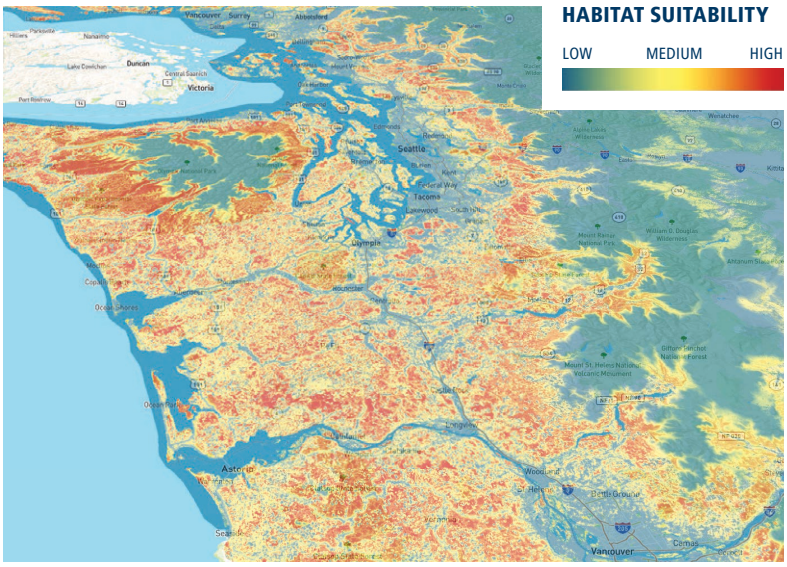


FIGURE 1.

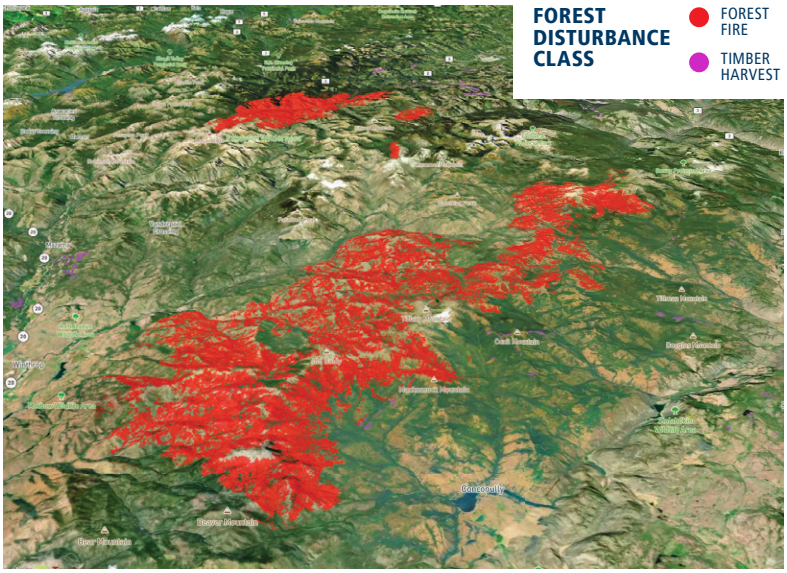


FIGURE 2.

Examples of Mapping and Monitoring Capabilities Made Possible by TerrAdapt

Figure 1. Temperate forest habitat. After 15 years of overall forest habitat and connectivity gains, lowland west-side temperate forest loss has outpaced regeneration from 2005-present, primarily due to urban expansion. This is driving declines in temperate forest habitat and connectivity.

In the dry montane forests characteristic of the eastern part of the State, there has been a steady decrease in forest cover area and forest connectivity since 1990. Here, forest cover loss and fragmentation are being driven by increasing large megafires that are widespread (Figure 2). Forest cover loss has been exceeding forest regeneration for the last 15 years, and the pace of loss has accelerated over the past five years (2015-2020). Loss of connectivity in montane dry forests from 1990 to 2020 shows core habitats becoming increasingly isolated from one another, with most loss occurring in lower elevation areas (Figure 3).

Figure 2. The area burned by wildfires has been increasing across eastern Washington's dry forests, driving corresponding declines in habitat and connectivity in affected portions of the montane dry forest ecosystem.

cascadia.terradapt.org
Explore this tool as developed for our region including all of Washington.

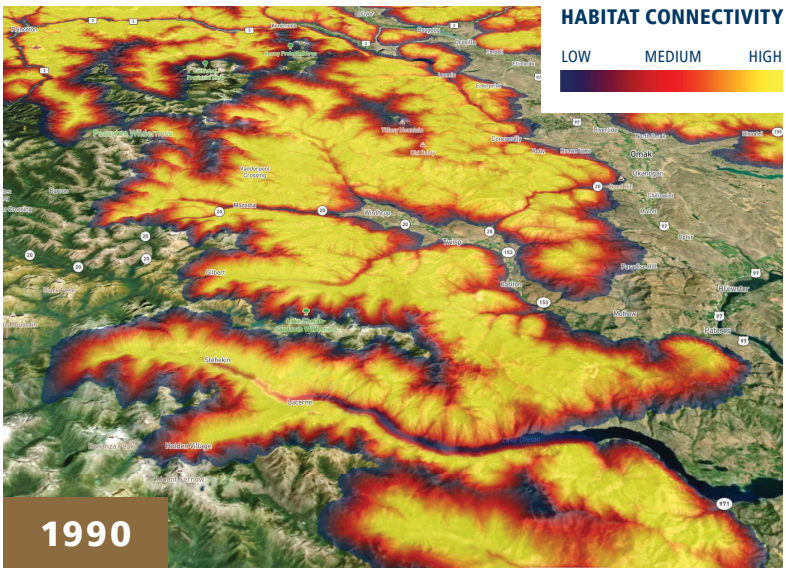


FIGURE 3a.

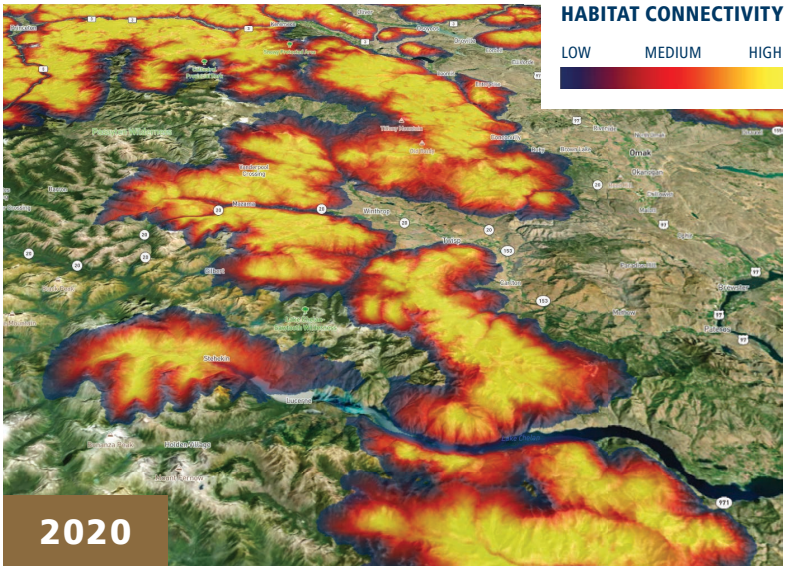


FIGURE 3b.

Figure 3. A comparison of connectivity for montane dry forests in 1990 (Fig. 3a, left) versus 2020 (Fig. 3b, right) shows loss of forest connectivity in the dry montane forest ecosystem. TerrAdapt allows managers to monitor this connectivity dynamically with automatically, annual updates – and prioritization features that adjust with changes on the landscape.

TerrAdapt's prioritization functionality allows for assessments of where habitat restoration, protection, or barrier mitigation efforts could help secure and improve forest habitat and connectivity given a set of values specified by the user. For example, in the Kettle Mountains in northeastern Washington, with TerrAdapt's protection priorities defined based on identifying the largest cores of highly connected habitat and climatic refugia, the model displays high priorities for dry montane forest protection. TerrAdapt also allows for the visualization of important restoration opportunities that could help augment fragmented montane dry forest as well as barrier mitigation opportunities for improving connectivity across this ecosystem. With dry forest ecosystems in this region projected to contract in the lowlands and expand in higher elevations, protecting and restoring connectivity now can help ensure resilience of these ecosystems into the future (Figure 4, next page).

cascadia.terradapt.org
Explore this tool as developed for our region including all of Washington.

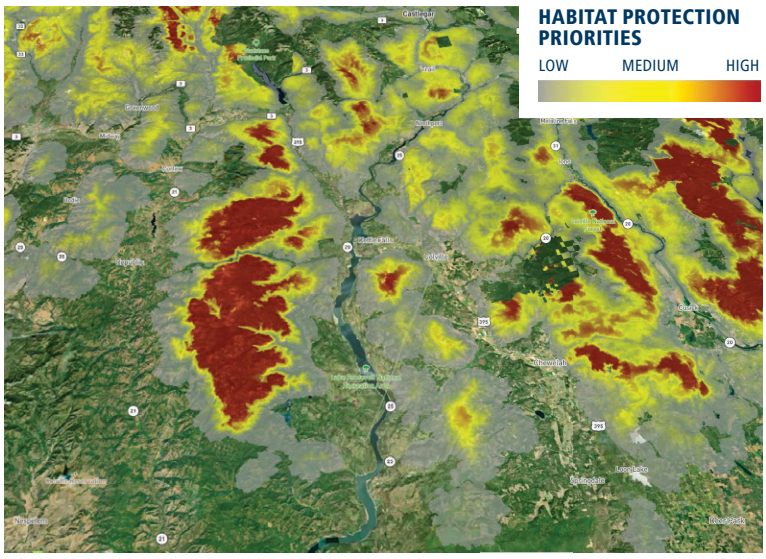


FIGURE 4a.

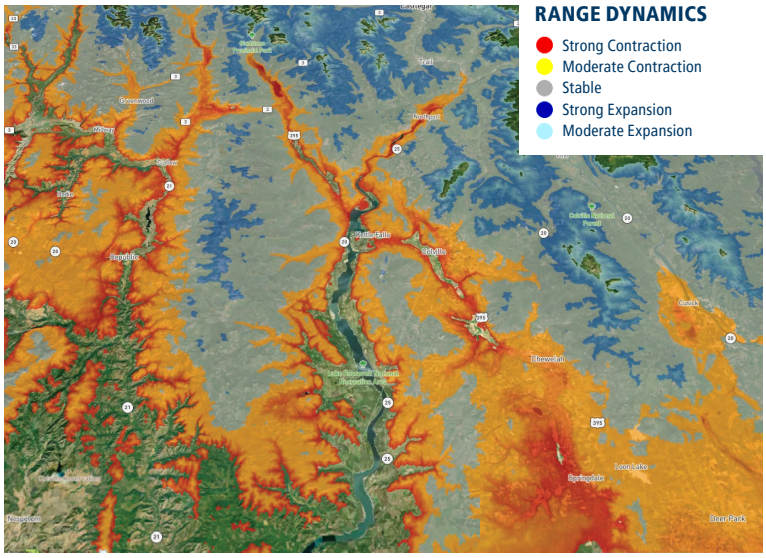


FIGURE 4b.

Figure 4. The Kettle Mountains stand out in a regional model of priorities for the montane dry forest ecosystem. High priority core habitat of montane dry forest ecosystem (Fig. 4a, left). The map below (Fig. 4b), shows projected montane dry forest expansion (blue) and contraction (red/orange) in the region.

In the year ahead, DNR Forest Resiliency Division will work with TerrAdapt developers to fully integrate these new tools into annual monitoring and decision-making processes related to Forest Action Plan implementation. Specific opportunities identified to inform and monitor Forest Action Plan goals and priority actions in addition to forest habitat connectivity are:

- **Annual updates on forest cover metrics** including forest disturbance associated with wildfire, logging, and conversion.
- **Statewide forest change from 1990 to present,** which provides longitudinal data to help evaluate habitat loss and changes in habitat connectivity over time.
- **Monitoring of above ground** forest carbon biomass.
- **Forest dependent species-based dynamic habitat** and connectivity models to better understand how land use changes impact species of greatest conservation need.

In the year ahead, DNR will work with TerrAdapt developers to fully integrate these new tools into annual monitoring and decision-making processes related to Forest Action Plan implementation. Specific opportunities identified to inform and monitor Forest Action Plan goals and priority actions, in addition to forest habitat connectivity, are:

- **Annual updates on forest cover** metrics including forest disturbance associated with wildfire, logging, and conversion.
- **Statewide forest change from 1990 to present,** which provides longitudinal data to help evaluate habitat loss and change in habitat connectivity over time.
- **Monitoring of aboveground forest** carbon biomass.
- **Forest dependent, species-based dynamic habitat** and connectivity models to better understand how land use changes impact species of greatest conservation need.

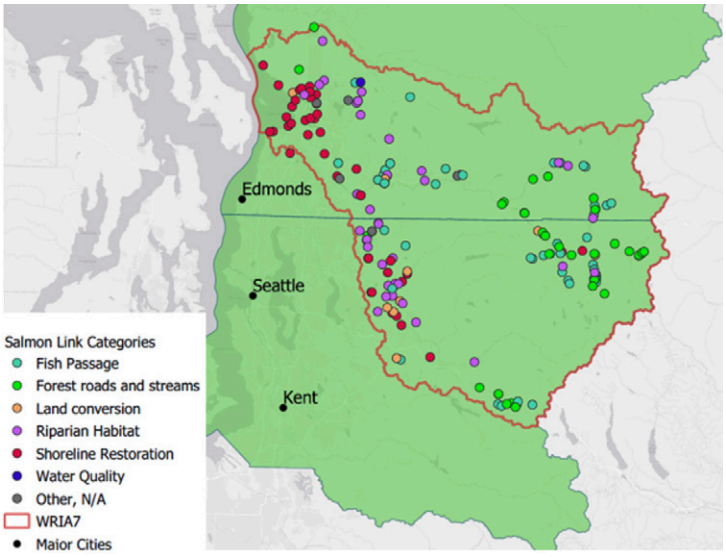
cascadia.terradapt.org
Explore this tool as developed for our region including all of Washington.

This photo taken using a drone camera shows part of the area affected by the Cedar Creek Fire in 2021. The Cedar Creek and Cub Creek 2 fires are being used for DNR's Work of Wildfire Rapid Assessment Protocol pilot program to evaluate the feasibility of rapid, post-fire landscape assessments.

DNR's Watershed Action Plan: Snohomish Watershed

Salmon habitat has been lost to human development in many areas of Washington through means such as construction of fish passage barriers, removal of riparian forests, alteration of floodplains, and water pollution. Washington's Salmon Recovery Action Plan focuses on correcting fish passage barriers, restoring and improving riparian vegetation, restoring estuaries, reconnecting floodplains and wetlands to streams, and improving forest health in ways that can increase economic opportunities and environmental justice. Salmon recovery efforts are led by eight regional salmon recovery organizations. These groups work collaboratively to develop recovery plans tailored to the local area, manage implementation and track accomplishments.

Washington DNR partnered with RTI International to evaluate the economic impact of implementing the agency's Watershed Recovery Action Plan for the Snohomish Watershed. Partners in the watershed have identified 275 salmon recovery and restoration projects valued at $273 million. At current funding levels, these projects would take 29 years to complete, risking salmon populations and the funds spent to support them. RTI International found that increasing historical funding of approximately $10 million per year by 100 percent could shorten that timeline by more than half, advancing critical support to salmon populations when it is most needed.



DNR Watershed Action Plan: SalmonLink Priorities in the Snohomish Watershed

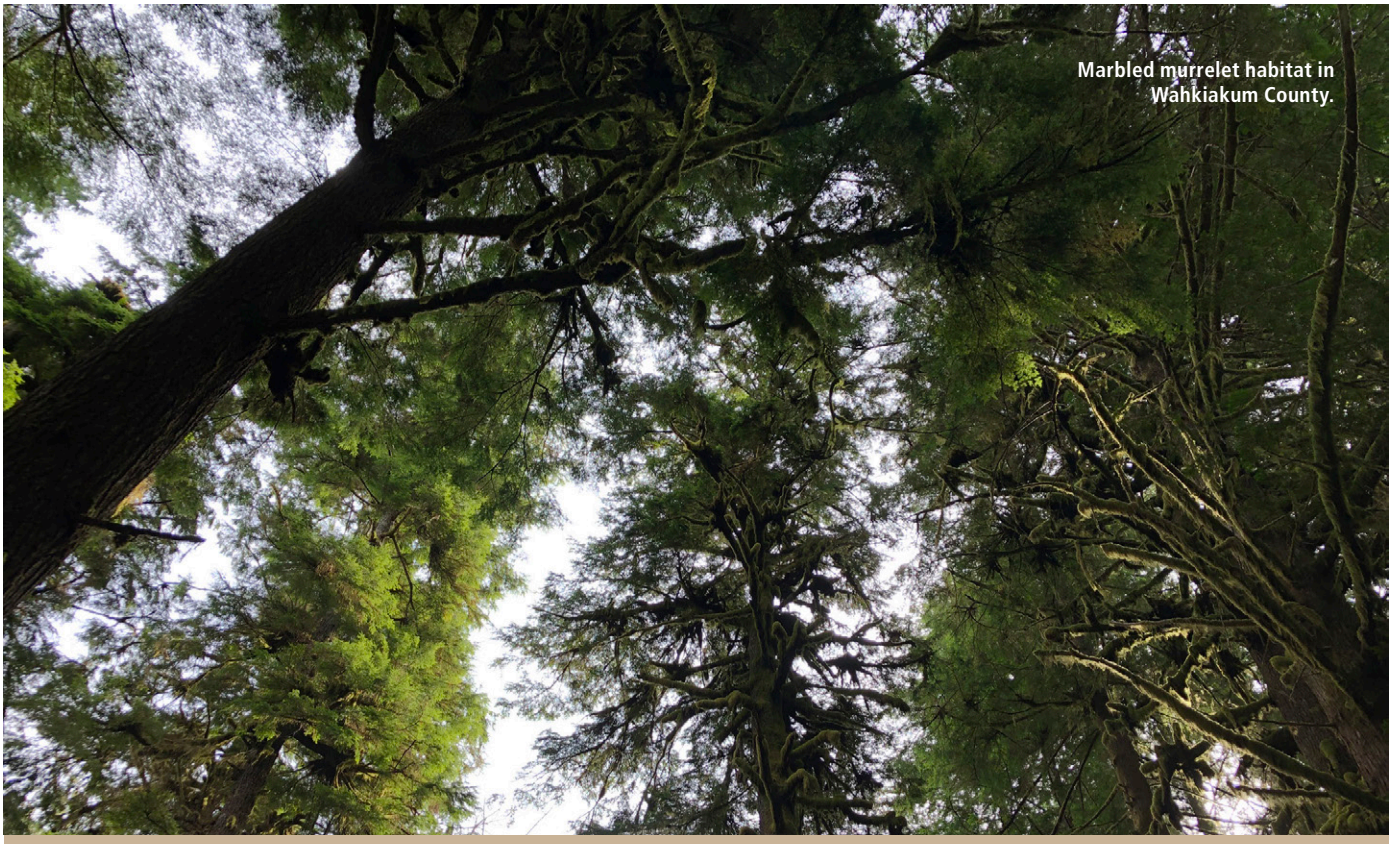
The map above depicts the Snohomish watershed (WRIA 7, red line) spanning King and Snohomish Counties. Colored dots represent the 275 projects identified as priorities to restore salmon habitat (SalmonLink, 2021).

Recovery projects also offer economic benefits in the form of jobs and wages. Recovery projects in the Snohomish watershed would support an average of 283-360 jobs in low (100% increase) or high (150% increase) funding scenarios and $12.5 to 19 million in annual wages. For every dollar spent on salmon recovery in the Snohomish Basin, 77 cents become wages for a Washingtonian. One million dollars spent on salmon recovery supports nearly 15 jobs, primarily in King and Snohomish counties.

Explore the Snohomish watershed with our new WatershedConnect online map tool.

Shrub-steppe Fire Recovery and Preparedness

While not a forest ecosystem, the health and resilience of shrub-steppe landscapes in Washington impact our forests and communities. Shrub-steppe lands are covered naturally with grasses and shrubs. The most common shrub, or woody plant, is big sagebrush. More than 800,000 acres of shrub-steppe burned during the 2020 wildfire season. Populations of endangered pygmy rabbits and threatened Greater sage-grouse populations were both significantly impacted by the fires. In response, the 2021 Washington State Legislature passed the Shrub-steppe Fire Recovery and Preparedness Proviso, providing WDFW with $3.85 million to address damages caused by the fires and restore critical habitat for these species. Funding will be used to conduct cultural resource reviews, replant native shrub-steppe plants, provide cost-share funding to private landowners who build wildlife-friendly rangeland fencing, and purchase hay for ranchers who defer grazing and allow burned shrub-steppe time to recover. WDFW is also initiating a collaborative planning process to identify rangeland conservation needs, develop recommendations to prevent devastating wildfires, respond to wildfire when it occurs, and implement recovery and restoration actions to sustain habitat and working lands. To learn more about shrub-steppe visit this link.



Marbled murrelet habitat in Wahkiakum County.

Conservation Agreements

Department of Natural Resources, WDFW and conservation partners in Washington continue to seek opportunities to provide regulatory predictability to forest landowners who help conserve species of greatest conservation need (SGCN). The Fisher Candidate Conservation Agreement with Assurances (CCAA) is designed to promote fisher conservation while also addressing landowner concerns about future regulatory restrictions if fisher were to ever become a listed species under the ESA. Visit this link to learn more about the Fisher CCAA.

Safe Harbor Agreements (SHAs) for marbled murrelet, listed as threatened under the ESA, are voluntary agreements intended to provide a net conservation benefit for the species while giving private or other non-federal landowners assurances that their forest management activities concerning murrelet habitat won't be subject to additional regulatory restrictions.

"INCREASING DEVELOPMENT IN PREVIOUSLY LESS-DEVELOPED LANDS TYPICALLY LEADS TO HABITAT LOSS AND FRAGMENTATION, INCREASED INVASIVE SPECIES, AND POLLUTION THAT CAN COMPROMISE THE HEALTH AND INTEGRITY OF MANY SPECIES."

DNR PLAN FOR CLIMATE RESILIENCE 2020

Restoring Native Habitat and Addressing the Spread of Invasive Species

Invasive species are organisms not native to Washington that cause harm and can spread across the state. They affect ecosystem health, displace native species, alter natural systems and effect numerous aspects of the state economy. Invasive species can also cause irreversible and costly harm to forests. Investments in prevention, early detection, and response are critical. A new invasive species is often extremely expensive to control once it is established. Upon detection, numerous partners often coordinate actions to mitigate further spread. A number of state agencies work together to address invasive species-related threats in the state: Washington Invasive Species Council, Washington State Department of Agriculture (WSDA), Washington Noxious Weed Control Board, DNR, WDFW, Washington State Parks and Washington State Department of Transportation, among other county and community-based organizations.

WDFW is partnering with the USFS under a GNA agreement to monitor the spread of an invasive fungus that causes white-nose syndrome, a disease that often kills bats. The fungus attacks the skin of hibernating bats and damages their delicate wings, making it difficult to fly. Infected bats often leave hibernation too early, which depletes their fat reserves and leads them to become dehydrated or starve to death. Washington is home to 15 species of bats that eat night-flying insects which threaten forest health, commercial crops and human health. Although the fungus is primarily spread from bat-to-bat contact, humans can unintentionally spread it by transporting fungal spores on clothing, shoes, or recreation equipment that touches the fungus. To learn more visit: www.whitenosesyndrome.org.

The Natural Areas program at DNR worked with local partners in 2021 to reduce the impact of invasive species on state lands. Highlights of this work took place in two Forest Action Plan priority landscapes in Puget Sound.

- **In partnership with the Hood Canal Salmon Enhancement Group,** DNR invested in the strategic removal of reed canary grass, English ivy, Scotch broom, and Himalayan blackberry along sections of Tahuya River, Dewatto River, Union River, Seabeck Creek, and Stavis Natural Resources Conservation Area. The work was conducted within the Hood Canal Priority Landscape as identified in the 2020 Forest Action Plan and supports the goals of the Hood Canal Salmon Enhancement Group.

WASHINGTON NOXIOUS WEED CONTROL BOARD

- **Through an innovative partnership with Mountains to Sound Greenway Trust,** DNR implemented priority actions in the Snohomish watershed to aid in ecosystem restoration through removal of invasive species. The project targeted the removal of tansy ragwort, yellow and orange hawkweek, European colsfoot, spotted knapweed, Himalayan blackberry, English ivy, holly, and Scotch broom in Tiger Mountain State Forest, Raging River State Forest, Snoqualmie River RV Park, Preston Mill, Stossel Creek, Meadowbrook Slough, Middle Fork Snoqualmie Natural Resources Conservation Area (NRCA), Mount Si NRCA, and Costco Issaquah Commercial Lease Site. The invasive species project supports implementation of the 2020 Forest Action Plan in the Middle Snohomish Priority Landscape and DNR Watershed Action Plan.

The Pacific Northwest Invasive Plant Council launched a Citizen Science Monitoring Program, where you can go to learn more if your organization or agency is interested in helping address the spread of invasive species in Washington.

Branch flagging in Douglas-fir in Thurston County caused by drought stress.

WATER QUANTITY AND QUALITY

WASHINGTON'S PEOPLE, PLANTS, ANIMALS AND TREES ALL DEPEND ON ACCESS TO A CLEAN AND RELIABLE WATER SUPPLY.

Drought Conditions in 2020-2021

For the majority of 2021, the U.S. Drought Monitor, which is published by the National Oceanic and Atmospheric Administration (NOAA), found that all of Washington State was abnormally dry. Almost the entire state experienced drought; extreme drought conditions existed in at least 47 percent of Washington.

"The drought that began in March continues across much of the Pacific Northwest, with impacts to agriculture, wildfire, drinking water, and more. As of August 17, 94.2% of the region is in drought."
NOAA U.S. DROUGHT MONITOR ON AUGUST 17, 2021

The 2021 spring and summer were some of the driest on record. Then, in late June a heat dome resulted in record breaking temperatures across the state. The conditions led the Washington State Department of Natural Resources and Governor Inslee to issue an Emergency Proclamation calling for a statewide burn ban. Two weeks later, based on the recommendation of the state Executive Water Emergency Committee (with membership form the Governor's Office, DNR, WDFW, Department of Health, Department of Agriculture and other key agencies), the Department of Ecology issued an Order of Determination of Drought Conditions, often termed a Drought Declaration. The impacts of the drought are widespread, including dry forested conditions that fuel wildfires. Dry conditions also impacted agricultural producers, who had to curtail water use earlier than normal. Salmon and other cold-water fish species were impacted, with signs of stressed fish reported in early summer months.

"A historically dry spring and summer, followed by a record-breaking heat wave, have affected water supplies across Washington, prompting the Washington Department of Ecology to issue a drought emergency for most of the state."
WASHINGTON STATE DEPARTMENT OF ECOLOGY ON JULY 14, 2021

The drought experienced in 2021 will impact forest ecosystems in the years to come. Future drought-related mortality and increased incidence of insects and disease across Washington's forests are expected to occur as a result of stressed and weakened trees. The annual Forest Health Highlights Report, published by DNR, describes these impacts across all forestlands in Washington State. A few years after the 2014-2015 drought, DNR forest health scientists mapped more than 1.5 million acres impacted by wildfires and estimated that 3.4 million trees had been recently killed, largely as a result of drought-stress, insect outbreaks, and disease (DNR 2018).

Forest Health Highlights: Drought and Forest Conditions

The annual Forest Health Highlights Report provides an overview of new and ongoing insect and disease trends impacting forest lands across the state. The report is used by scientists, forest landowners, and wildfire management teams to assess impacts, plan projects, and implement actions. In 2020, as a result of the COVID-19 pandemic, the aerial surveys conducted by DNR and USFS to inform the report, were grounded for the first time since 1947. To adapt, DNR scientists used a combination of high-resolution satellite images, orthophoto imagery and ground surveys to cover about half of the 22 million normally observed by the annual aerial survey. Prioritization of areas with elevated risk, recent damage and the availability of satellite images led to about 80 percent of the surveys taking place in eastern Washington. Observers drove more than 3,500 miles over several weeks to conduct the ground sampling.

"One of our most important tasks each year is to monitor the health of Washington forests," DNR Forest Entomologist Glenn Kohler said. "Our forest scientists rose to the challenges presented by COVID-19, put forth the extra effort to collect data across thousands of square miles and will use the Forest Health Highlights report to guide their work for the coming year."

Unlike in prior years, the 2020 Forest Health Highlights report does not include summaries of acres affected by specific damage agents due to the reduced survey area and pandemic-caused changes to survey methods. Highlights of recent trends and damage locations contained within the report include:

- **Detection of a non-native sooty bark disease** causing on a variety of maple trees in the Seattle area. The statewide impact and distribution of the disease is not currently known, but its spread onto native maple species is concerning and requires additional research.
- **A total of 1,638 fire occurrences reported** statewide in 2020, up from 1,395 in 2019 and well above the 10-year average of 1,466. About 95 percent of those were caused by humans and 41 were considered large fires by the National Wildfire Coordinating Group (NWCG), nearly double the 23 large fires recorded in 2019.
- **Previously reported outbreaks of Douglas-fir tussock moth** in Kittitas, Chelan and Okanogan counties appear to have collapsed due to natural controls. An outbreak of spruce aphid affecting more than 10,500 acres of forest along the Washington coastline also seems to have collapsed.


Asian gypsy moth adult

JOHN GHENT / BUGWOOD.ORG

- **Dieback and mortality of western red cedar** was observed in 2020 throughout Washington. Symptoms of dieback include discoloration of the needles, thinning crowns and heavy cone crops. Damage agents including wood-boring beetles and cedar bark beetles were observed at some sites, but recent drought and high temperatures are likely the primary cause of the dieback. Ground surveys reported more extensive mapping of western red cedar dieback in 2020 than in previous years.
- **WSDA conducted a gypsy moth eradication project** in spring 2020 by treating more than 1,300 acres in two areas of Snohomish County. One area was the site of first-ever detection of the Hokkaido gypsy moth in the United States. WSDA proposed a 634-acre treatment in Cowlitz County in the spring of 2021. Large numbers of traps were deployed along the Columbia River in 2021 in order to follow up on the detection of Asian Gypsy Moth in northwest Oregon by the Oregon Department of Agriculture.

"The Forest Health Highlights report is an annual reminder of the crisis our state forests face due to drought, disease and insect damage," said Commissioner of Public Lands Hilary Franz, who leads DNR. "Forests in poor health are more susceptible to catastrophic wildfires that threaten our communities and place our heroic firefighters at greater risk each summer. The information gathered by our scientists informs our implementation of DNR's 20-Year Forest Health Strategic Plan and will help drive the groundbreaking investments in forest health made possible by House Bill 1168."

The 2020 Forest Health Highlights Report is available at this link.

Seeking Solutions to Mitigate the Impacts of Drought

In 2020-2021, DNR Forest Resilience Division took steps to strengthen the considerations and impacts of drought into landscape-scale planning while investing in strategies to increase the natural water storage potential of the landscape and water quality of our rivers and streams. One part of the solution we invested in was beavers – nature's engineers. By slowing down and storing water behind dams and in ponds, beavers increase climate resilience and mitigate the impacts of floods and drought. Prior to recent studies, the relationship between beavers and wildfire was not well understood. Researchers Emily Little and Andrew Whittle published "Smokey the Beaver: beaver-dammed riparian corridors stay green during wildfire throughout the western United States" in 2020. The researchers used remotely-sensed data to evaluate the influence of beaver-dammed riparian areas on wildfire outcomes in five western states. They found that riparian areas with beaver dams are relatively unaffected by wildfire, remaining green more often compared to similar riparian areas without beaver damming. Beavers were found to play a critical role in the fire resistance of riparian vegetation and also aid in the creation of fire refugia across the landscape.

The Colville Confederated Tribes partnered with Trout Unlimited and the Okanogan-Wenatchee National Forest in 2021 to use 2019-2021 Forest Hazard Reduction capital funding from DNR to install 61 beaver dam analogs on national forest land within DNR priority landscapes in the Upper Columbia River Basin. Beaver dam analogs are human-made beaver dams that begin storing water right away. The hope is that beavers move in to maintain those benefits over time. In addition to beaver dam analogs, the project included outreach to 32 landowners to inform them of techniques to improve coexistence with beavers at six different locations. These included tree painting, tree caging, and the use of flow devices. It also included beaver trapping at 23 different sites. Trapping occurred on land owned and managed by private landowners, Chelan County Public Utility District (PUD), orchardists, and irrigation districts. Following this successful collaboration, DNR has already committed funding from House Bill 1168 to continue this work in priority landscapes effected by drought during the 2022 fiscal year.

The Methow Beaver Project is providing regional leadership in advancing restoration and resilience through beaver reintroduction into the Methow Priority Landscape. The project started as a way to support ecosystem restoration by relocating nuisance beavers from private lands to more suitable stream reaches on public lands that would benefit from beaver reintroduction. The work has grown to include engaging with DNR's Northeast Region. The mission of the Methow Beaver Project today is "to work with beavers as partners for restoring streams, riparian habitat, and biodiversity while reactivating wetlands, increasing water storage, and fostering community education and involvement to improve the health and resilience of the Methow River watershed." Project partners offer watershed planning expertise, landowner assistance and support, field trips and student curriculum, and professional trainings and workshops. The project's influence extends far beyond the Methow, as other communities and watersheds seek to integrate lessons learned into watershed planning and restoration efforts across the state.

Water Quality and Forest Roads

The 2020 Washington State Forest Action Plan set a goal to "[p]riortize and address the backlog of maintenance on federal lands." USFS has thousands of miles of roads in Washington State. Forest roads are expensive to maintain and repair – agency partners often lack necessary staff capacity and funding to address the backlog. Forest roads in disrepair limit public access, impede forest restoration treatments and result in increased sedimentation and water quality issues downstream. DNR is piloting efforts through our partnership with USFS to provide engineering staff support using Good Neighbor Authority agreements, and by purchasing rock and other materials for road repair as part of the state's direct investments in the Forest Action Plan and 20-Year Forest Health Strategic Plan: Eastern Washington. On the Mount Baker-Snoqualmie National Forest, DNR recently procured 3,595 tons of gravel that will be used to surface seven miles of road in the Mt. Baker-Snoqualmie National Forest. Improved road access will enable the implementation of treatments on hundreds of acres of forest health projects near the towns of Darrington, Greenwater, and Glacier, Washington. Road resurfacing will also benefit local recreational users, reduce sedimentation, and improve watershed condition in the Stillaguamish, Snoquerra, and Nooksack Priority Landscapes.

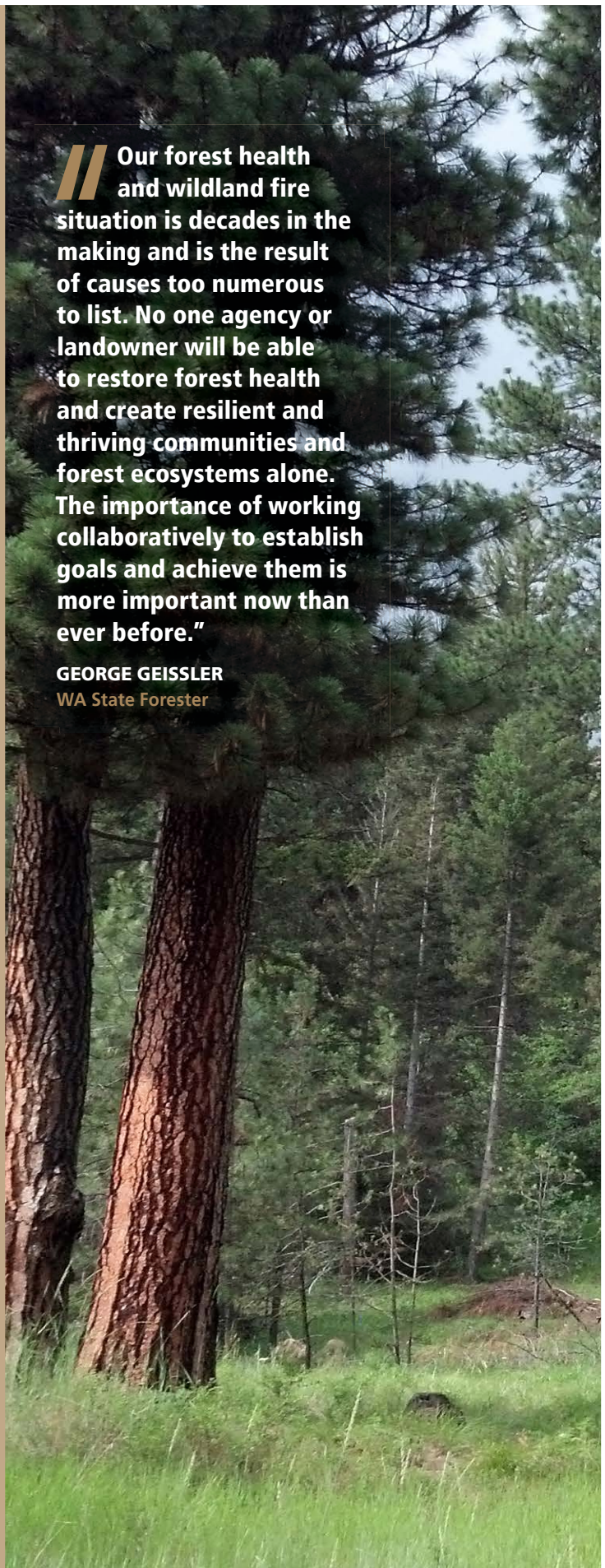
Conclusion

Despite uniquely challenging conditions that made collaboration and operation of programs vital to the success of our Forest Action Plan more difficult, significant progress was made over the past year through implementation of numerous goals and priority actions that will supply momentum and lessons learned to guide our work going forward.

Implementation of the plan will be accelerated by passage of House Bills 1168 and 1216. New financial and staff resources will increase our opportunities to achieve the goals and priority actions identified in the plan. The legislation will also help the agency better assess and focus our work in ways that address social justice and environmental health disparities facing highly impacted communities on the front lines of climate change.

The 2020 Washington State Forest Action Plan set a course for advancing forest and community resilience over a five year period ending in 2025. DNR will publish an annual report that celebrates progress and success stories, notes key barriers and challenges, and identifies opportunities for improvement. As DNR and our partners continue to implement the Forest Action Plan, the agency will rely on the commitment and ingenuity of its staff, as well as that of sister state agencies, federal agencies, local governments, tribes, private industry, and nonprofits. It will take all partners working together towards our shared goals to successfully implement the action plan.

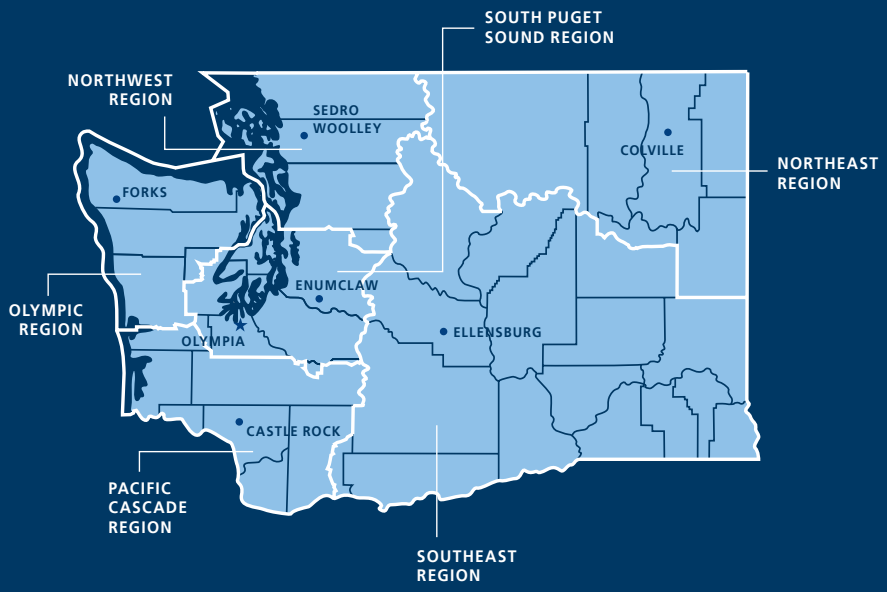
DNR appreciates the significant contributions that our partners have made over the last year. The success stories and progress highlighted in this report would not have been possible without these partnerships.



CHUCK HERSEY / DNR

"Our forest health and wildland fire situation is decades in the making and is the result of causes too numerous to list. No one agency or landowner will be able to restore forest health and create resilient and thriving communities and forest ecosystems alone. The importance of working collaboratively to establish goals and achieve them is more important now than ever before."

GEORGE GEISSLER
WA State Forester



dnr.wa.gov/foresthealth

Contact

DNR welcomes input and ideas about how to continue to accelerate implementation of the action plan. For more information about Washington State's 2020 Forest Action Plan and to learn more about this annual report visit: **dnr.wa.gov/ForestHealth**

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NATURAL RESOURCES
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